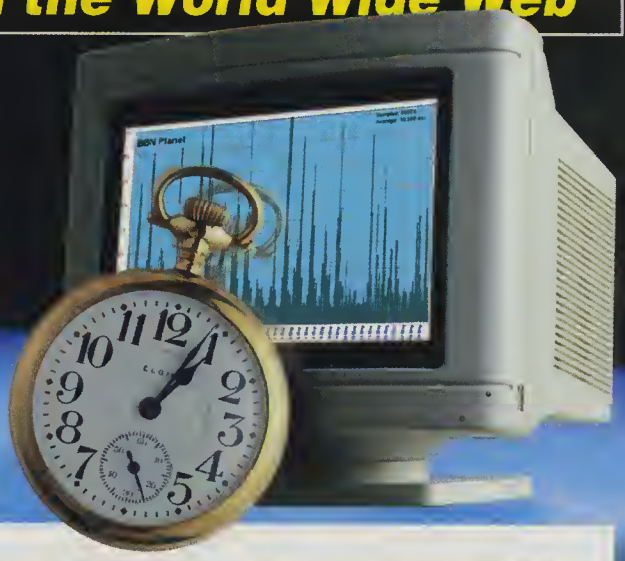
July 1997

BOARDWATCH MAGAZINE

Guide to Internet Access and the World Wide Web

BEST OF THE INTERNET

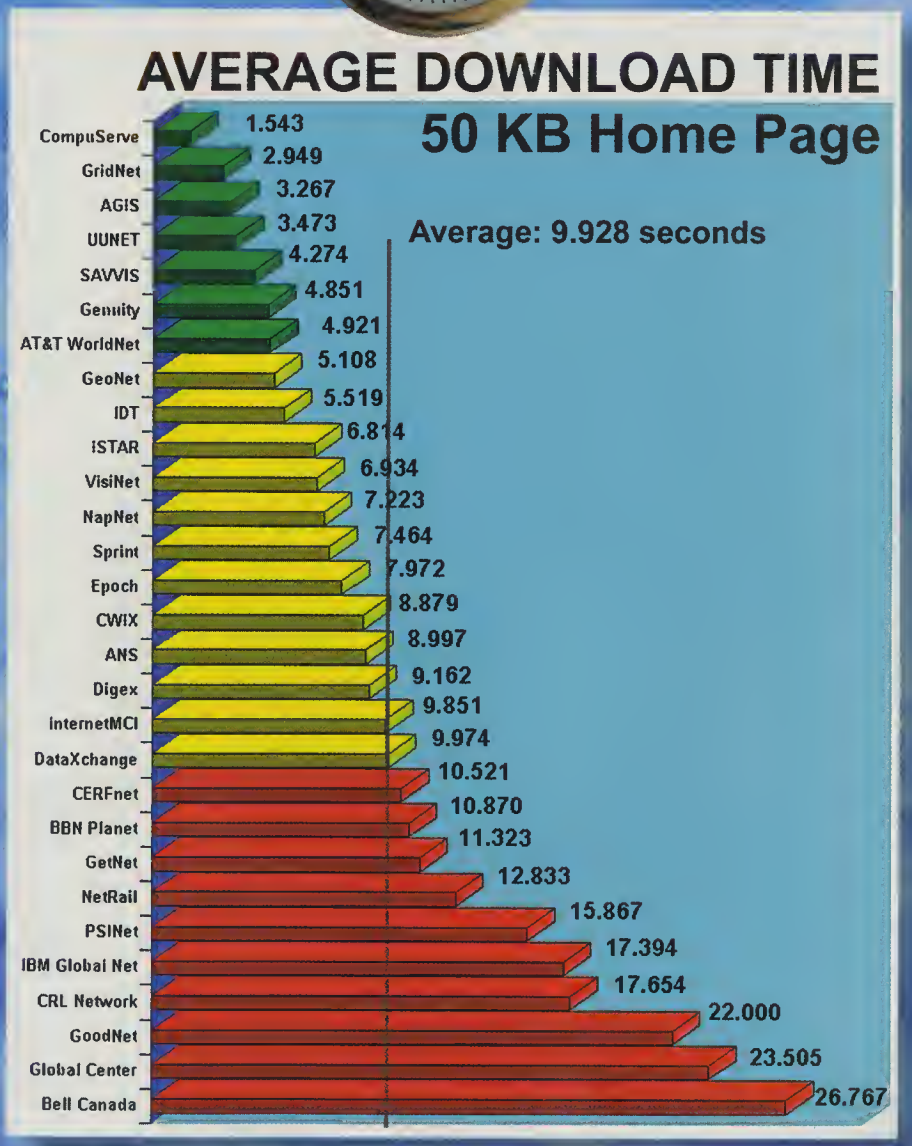
Actual Performance Comparisons of 29 Internet Backbones



DIGEX - Life and Sale of an Internet Backbone

EarthLink vs. Cyber Promotions

Precedent Setting Court Rulings Could Limit Spam



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Guide to Internet Access and the World Wide Web
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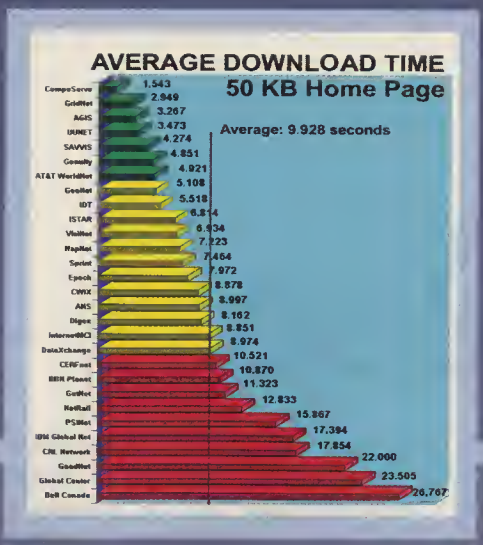

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EDITOR'S NOTES by Jack Rickard

SERIAL KILLER AND PERFORMANCE METRICS

Earlier this year we were approached by a stereotypically young self-avowed networking genius at NANOG-9 in San Francisco. He was part of a newish national backbone titled SAVVIS Communications out of St. Louis, funded by the grandson of August Busch, the beer magnate of the mid-west. They had a plan for a network that would offer much better performance and connectivity by not appearing at any of the official Network Access Points and not peering with anybody.

This sounded like madness of course. He went on to explain that they had established five "private NAPs" in cities around the country and linked all of that with pretty standard 45 Mbps DS-3 connections. At the five private NAPs, they would purchase a DS-3 connection to UUNET, internetMCI, and Sprint IP Services — and ultimately anyone else who comprised 5 percent of their traffic or more. He insisted that their network would operate much better than anyone else's (we hear that a bit) by, in this case, avoiding the NAP bottlenecks.

There was really no way to prove this claim. And in fact he knew it. He offered to link us up so we could "test it." Testing is a little more complicated than hooking up a T-1 and seeing how it feels unfortunately, and we didn't pursue this option at the time. It was a claim. An idea. Words.

I was haunted by two aspects of the concept however. It is obviously a bit expensive to buy FIVE DS-3 connections to THREE major backbones in five different cities. But it rather turns the Internet power structure essentially upside down. By virtue of the golden rule (he who has the gold rules), they can set up their own NAPs and dictate who peers with whom where, at what speed, etc. You HAVE to peer with your customers.

If one backbone did it, it would be a bit of a novelty. If ALL of them did this, things turn a little bizarre. The MAJOR backbones at the top then dance to the tune of those buying the connections in many ways. Let's extend it further, an individual ISP then multi-homes to several of these backbones configured in this way, creating a bit of a miniNAP — again operated not by the current loose and uneasy cooperation, but by checkbook.

If you follow the line of reasoning here, it essentially inverts the Internet power structure. The implications made my head hurt. I honestly don't know what would happen.

The other haunting thing about this exchange is the conundrum of: "How would anyone know?" Perhaps not in this instance of SAVVIS Communications. But the network is struggling under scaling difficulties and as anyone can tell, all is not well in Internetland on many an afternoon. What if someone came up with a fantastic new idea on how to fix it all? And as fortune might have it, they were standing in front of me describing it in detail? After 25 years in the technical community, I can still barely follow some of these conversations without glazing over. It would be very easy to nod sagely and move on through the crowd. I wouldn't know if it was the next greatest thing on the planet, or if it was insanity in a dirty T-shirt with a string of secret homicides stretching back twelve years and body parts in refrigerators all across the continent.

What if it was JUST the right technology or architecture at JUST the right moment in time. But because nobody could tell if it would work or not, no funding was forthcoming, and the guy wound up working the help desk at EarthLink and going back to school for a degree in Russian Literature. This all leads to a rather bleak future of an Internet devolving to ever more joyful levels of mediocrity. If you do a good thing, and nobody is there to hear it, what happens to the forest?

The current game of "who has the best network" is driven by public relations — not performance. And profitability is driven ever toward providing ever less network, to ever more customers, and covering your tracks with ever more television advertising. This does not augur well for the network.

In the competitive marketplace, I am very sympathetic to the poor schmuck who actually HAS a better network, has invested heavily in building it, and truly can deliver better performance. His claims are drowned out in the noise of claims of competitors with poor networks that have poor performance at the same price, but claim superior performance using the same words, the same gestures, and the same PowerPoint presentations. It's a gigantic game of liar's poker. How do you prove your case to a customer? How will the customer know? How can YOU even be sure you DO have a better product?

And because nobody knows, and nobody wants to be shown second best, there has been no movement toward rational performance measurement metrics. There actually HAVE been some salutory efforts, but because nobody WANTS to be compared, it has been politically impossible to expand them or even report them. Merit actually published an obscure report

on packet transit times and packet loss — listed with ten backbones identified in bold characters as NAME WITHHELD BY REQUEST. It is madness and to laugh.

Contrary to popular opinion, network performance measurement is actually a little shy of rocket science. You put some stuff in one end, and stand at the other and watch it come out. You need a meter at both ends. And if there are a lot of ends, then there are a lot of ends and a lot of meters. Big deal. But in a cooperative world, network measurement is NOT impossible. Cisco Systems actually has a pretty nifty measurement system built into their routers now titled *NetFlows* that presents an infinitesimally miniscule loading factor to the network and provides extraordinarily detailed information on what is happening to the networks performance wise. But it would require an enormous cooperative effort among very willing vendors to collect all this in a centralized SQL server and develop some truly useful measurement metrics. They don't apparently want you to know. I'm not sure they want to know themselves.

We can force the issue a little bit. With the help of Keynote Systems, we have found it is quite possible to brute force performance measurement. We simply install a lot of meters at the edge of the network, aim them at backbone web servers, and measure the crap out of them four times an hour forever. We can then boil this down in massive averaging to simplistic numbers that can then be compared. We do this in this issue. We think the methodology is "true" on its own terms, and provides "true" relative comparisons. We present the results in this issue with about 25 pages of graphs. And we think they will cause cranial detonations across the network. A lot of what is vaguely "known" across the network by the body politic consciousness does not appear to have any reality component. Internet performance varies DRAMATICALLY, and it does not show up where everyone thinks it would show up. We were ourselves astounded at some of the results. How can this be?

Our hope is that someone takes this away from us. The methodology is the best we can devise, and we defend it as basically "true" and "real." But any moron can easily see that it could be improved on technically. But particularly in a cooperative effort with resource, some good net minds, and some value as an independent agency.

Our claim is that network performance will improve in the harsh light of performance measurement reporting. All sales claims are BS until backed by such measurement. And good ideas and inventive innovations can only flourish where they can be proven against some index of relative performance. It would be VERY GOOD for every single national backbone operator, every Internet service provider, every hardware and software vendor, and every end-user and customer, if such a measurement index were developed. And the good far outweighs the negatives for any network serious about providing quality service and products.

I guess the end message and our fondest hope is that we've blown the cover on the game of liar's poker. But ultimately, it could be much improved if ALL of the national backbones formed a professional association, funded and developed a truly professional testing lab after the fashion of United Laboratories, and developed detailed, advanced measurement and performance testing methodologies, and widely published the results, including making them available to us and all trade publications.

The carrot is an organization where all the truly excellent technical minds operating in the back rooms of these networks can have input on the methodologies and testing metrics used, and ultimately a reference where experiments and innovations can be compared to extant network conditions. Network sales can be made based on real, acknowledged, and respected indices of performance, regularly reported. And if you build a better network, the world will know and you will be rewarded. An industry cooperative standard.

This testing lab should test backbone performance, web server performance, dial-up performance and port availability. If someone claims they can do 56 Kbps dial-up, it should be submitted for testing and the results published. You can do 20,000 feet xDSL? Send it in. Pay the fee. Publish the results. It should be an industry cooperative professional testing association, not some crazy crank magazine editor that drinks too much cabernet and would rather drive a Hummer around the hills of Colorado.

But the stick is us. If this industry does not develop its own testing methodologies, they can live or die by ours. I've got some gruesome plans for national dial-up provider testing....code named SERIAL KILLER if that gives you a clue...

Jack Rickard
Editor Rotundus

PS. Oh, as it turns out, as you can see from the graphs, SAVVIS' performance IS pretty impressive. But the kid has left the company and gone to Canada I'm told. Oh well...

Letters to the Editor

Boardwatch Magazine
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LETTERS TO THE EDITOR

Address correspondence to Letters to the Editor, *Boardwatch Magazine*, 8500 West Bowles Ave., Suite 210, Littleton, CO 80123; by fax to (303)933-2939 or by e-mail to `letters@boardwatch.com`

ASKING FOR ADVICE

Dear Jack:

Please forgive what I suspect will be an overly long letter which asks for advice on what is essentially a personal matter. My reasons for writing you are pretty simple. First, you publish a magazine that I consider to be the bible, a serious and invaluable resource for people who really want to know the facts. Second, after all these years (I've been a subscriber to *Boardwatch* since late 1992 and have attended BBS/ISP CONs in Colorado Springs, Atlanta, and San Francisco and am booked for this year in San Francisco), I somehow consider you a friend. Finally, I suspect that you are in at least a position to make some constructive comments.

I am a 50 year soon to be ex-attorney. I've worked at Inland Steel Company for 17 years. Earlier this year I decided that I'd had enough of doing what I didn't like (practicing law) and decided that it was time that I pursued something that I did like. What I like is applying computer technology. More specifically, I am smitten by the ability of Internet technology to communicate information, whether of a business or personal nature, thereby improving the ability of people or businesses to communicate with each other. I've already built a small intranet site for Inland's Law Department in order to assist my colleagues to more easily get the hang of researching on the Internet. I've also designed a web site for the real estate development where I live (`www.prairiecrossing.com`) on a volunteer basis, though far fewer pages are actually accessible via the WWW than we've written because we have to get the developers to approve everything before we put it online. (Yes, I realize that exploiting the spontaneity of the Internet is one of the advantages of publishing on the web, but I can't seem to convince the developers to give the web site the same priority that I would give it.)

My computer knowledge, though not insubstantial, is neither formal nor technical. Everything that I know how to do I've learned from reading various computer magazines, especially ***Boardwatch***, or figured out in the real world. I don't not know how to program and try as I might to follow Doug Shaker's recent columns, they simply go over my head (and I happen to be 6'8"). I've put myself in a position where I will have time over the course of the next year to devoting a decent block of my time to improving what skills I do have and obtaining the skills that I don't have.

Here is my question. Assuming that my goal is to become a consultant to law firms or departments on how to use communications technology, or to be the information director of a law firm or a law department, what would you recommend that I spend my time pursuing. Within that framework I might also want to develop applications. Should I try to learn Unix? (I currently operate use 95 at home.) An IT friend of mine suggested that I focus on learning Visual Basic and Access. Is Java important?

I've seen advertisement for any number of web certification companies, but I am leery of them. Are there any that you know to be reputable or otherwise worth pursuing. (To the extent that geography matters with respect to that last question, I live in the Chicago metropolitan area.)

I recognize that you don't know me from Adam, though if you saw me in a crowd you might wonder where you'd seen me before, and what I am asking you is at least vague and open ended, but if there are any thoughts that you could share with me, I'd be most appreciative.

Barry Levinsky
`Barryl@interaccess.com`

Barry:

Packaging, packaging, packaging. It's a world of packaging. You're in a great position I think and have a good concept for a vertical package.

To all of us on the Internet, everything looks old, done to death, and passé at about the time it actually becomes important. Picture this — almost nobody is on the Internet yet, even now.

There is a tremendous number of small businesses that just haven't made the trip. And they haven't made the trip for good reason. It doesn't quite work without a Linux guru on staff. You could rather easily put together an "Internet package" for small law offices that takes the icky out of the Internet.

It would be some work, but it would start with a truly excellent web page index of all web resources of interest to lawyers obviously. If you can amass the 3,000 web sites and online resources most used by lawyers into an easy to use index, this would be the heart of your product.

Add a package that provides the hardware and software to make a connection to an Internet service provider. eSoft's IPAD, the Apex TEAM product, or the Whistle InterJet come to mind. Something relatively inexpensive that does the connection.

Partner with an Internet service provider to provide the basic connection. You might wind up with several to gain a "footprint" covering wherever you want to sell to geographically.

Add the browser and e-mail application software.

Add installation and consulting services to go in, set up an office with the entire connectivity, and connect their existing mail system to the Internet. Put up a

local web page on their internal machine with all the legal resource HTML references on it.

In this way, you can develop a package that makes specific sense for small law offices, and sell the entire package — access, software, hardware, installation, to put them up on the net and get them doing something useful, without learning Linux in their "spare" time. The web resources list is rather key to trimming this up specifically for small law offices.

This product line can be replicated almost endlessly into a variety of market niches. But it requires someone with a knowledge of the niche, and a knowledge of the technology. Those people are relatively rare. If you are going to market to masonry contractors, it helps to BE a masonry contractor who is also fairly expert in TCP/IP. A masonry contractor who mainly knows masonry would talk to another masonry contractor, and they would basically agree that using a pencil and pad would probably be better.

If a TCP/IP guru talks to a masonry contractor, two people walk away with two different stories. "TCP/IP gurus are weird." "Masonry contractors are weird." Do you see why this doesn't come up much? Someone has to bridge the two worlds.

You show a predisposition to acquire the knowledge of good and evil in networking. And you already comprendo the problems of the small law office. The rest of it is integrating an effective package that you can sell, install, and support.

Jack Rickard

◆◆◆

FEW QUESTIONS AND A COMMENT

Hi Jack,

I have a few questions about your March 97 editorial on AOL and US WEST. In this article, you mention a Bell Atlantic study. What was the title of this study and is it freely available? Secondly, where were you able to obtain a copy of the letter from US West? I'm interested in the attachments that Mr. McClellan mentioned, specifically the milestone report mentioned in the first paragraph of the Facts section and the article that he mentions in the second to last paragraph of the letter.

I also have one more question about the information that you gather on the backbone ISPs. I talked to a UUNET sales rep and asked him for switch site locations (street addresses and such). He gave them over freely, which honestly surprised me. The information I received also indicated which telco owns the facility where the ISP switch is collocated. I'm wondering if any other backbone ISP provided this sort of information to you freely. If so, can I get a hold of that information from you?

Lastly, I wanted to address one comment made about MCI's reluctance to provide network data because of potential threats and terrorist incursions. I work directly on this issue as a contractor for the government and I know that the government considers these threats to be real and possible. The paranoia may be unwarranted, but it is a good reason for not revealing their network to the public. Thus, I would not immediately presume that the upgrade of the internetMCI backbone encountered difficulties because of their reluctance to publicly share their network topology.

-Sounil Yu
YuSounil@bah.com

Mr. Sounil:

The Bell Atlantic study mentioned is still readily available on the Bell Atlantic web site at `http://www.ba.com/ea/fcc/report.htm`.

The article listed the full contact information for the Washington State PUC and all materials are a matter of public record regarding Mr. McClellan's letter and attachments.

I too am surprised that UUNET provided actual street locations, but it really IS your business to some degree. In any Internet connection, you will also have to provision a local loop circuit from the local telco to reach the UUNET POP. This is mileage based and in fact who you can get this from is largely based on your two respective locations.

Having spent 18 years either in the military or as an employee of defense contractors involved with the most urgent defense electronics programs (MX Missile for example), I've found secrets to be more costly and damaging than spies and foreign governments. But this philosophy matters little in this particular case. The level of detail we can practically provide in a publication of even 500 plus pages is pretty limited. We do not publish street locations of hub equipment rooms generally, and it would have to be a pretty special point of interest for us to do so at all. We, and our readers, are more interested in the relative positions in the geography of networks — how far is my local exchange from their nearest POP etc. And there is some geographic component to selecting a backbone provider — as you will readily see from the 25 pages of performance data we publish in this issue. We think what city a major hub is located in, and how it is connected to other hubs, is pretty basic information.

Which rather brings us to internetMCI. internetMCI, in fact, had a page on their web last year noting that any Internet service provider that would not show you a detailed map of their network was essentially selling air and perpetrating a scam — buyer beware. They have apparently had a change of heart. But it is now a secret what hub cities they are in and what the links are between cities for security reasons? It's a secret because they cannot in public be touting network architectures that don't exist actually. They have made vague reference to immense investments in backbone architecture, 622 Mbps OC-12 connections (somewhere), etc. without specifics. From the test data, I would have to seriously question even the vague allusions to OC-12 et al. They clearly have the lion's share of the market, and not particularly sufficient network to handle that many connections. The "security" explanation WAS very weak, and from my point of view is now rendered absurd. I rather liked their original assertion that such activity was shady dealing.

Jack Rickard

◆◆◆

KNEE DEEP IN HOT SPAM

Bill,

First of all, let me congratulate you on a well-written and balanced piece that you did recently, "Knee Deep in Hot Spam." I was favorably impressed with the article, and I wanted to offer a few points that I feel may be cogent. I'm a web-service provider, partnered with an ISP in Kenosha, Wisconsin.

I've been both on both sides of this argument, so I feel I've got a reasonable perspective on the issues and emotions involved in the debate. I'd like to kick in my buck-twenty worth...

In your article, you quoted such N.A.N.A.* notables as Robert Braver, Scott Hazen Mueller, and J.D. Falk. I've crossed swords with all of them in the

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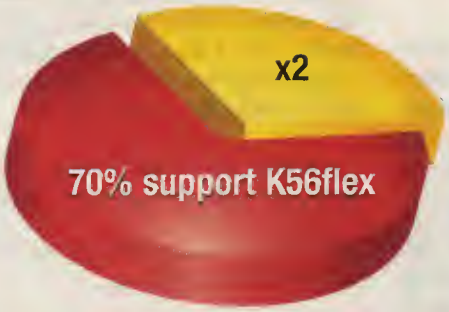
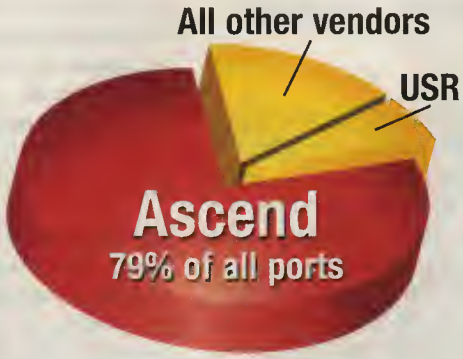


***Based on Dataquest Modem Shipment Report (7/96)*

DIGITAL ACCESS CONCENTRATOR MARKET SHARE

(PRI port installed base-shipments 1994-1996)

Vendors	*PRI ports (1994-1996)	Market Share	Support K56flex	Support USR x2
Ascend	2,244,500	79%	Yes	
Cisco	249,900	9%	Yes	
USR	162,100	6%		Yes
Shiva/Spider	96,600	3%	Yes	
Cabletron	46,100	2%	Yes	
Gandalf	42,200	1%	Yes	
Total Market Share			**94%***	**6%***



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** Source: The Del 'Oro Group (4Q 1996 Report)*

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* Current FCC restrictions, line conditions and other external factors will reduce data transmission rates and may reduce them significantly.

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past, and now find myself on their side as this 'Jihad' rages on.

Originally, I felt as AGIS' Phil Lawlor does; in fact he might well have taken his philosophy from the very words of my arguments on NANAM just a year ago. It's that close. I felt that as an ISP, it was not my place to attempt to regulate the lawful operations of my clients. If they wished to spam, well, spamming is legal, and what is not prohibited is permitted in a capitalistic society. To be sure, I got my share of complaints, but I put most of them into the "whiny little crybaby" category, and didn't pay much attention, until December of 1995, when I lost a client because some anti-spam do-gooders had contacted one of my clients directly and given her such grief over the phone that the poor old lady broke down in tears. She had been convinced by some anti-spammer that she was about to lose her (established in 1957) mail-order business, just because she had spammed Usenet (and actually, she hadn't; I had, on her behalf). I got so angry over losing this valued client that I jumped into NANAM with righteous fury and indignation, and I began chewing people out right and left. I tore up most of their arguments, destroyed them with my cold logic and facts, and entertained myself with lots of obscenities whilst doing it, too. I was like an avenging angel, I thought. Then, my servers began to get hacked. It turned out to be nothing serious, but a few times, my servers crashed for no apparent reason, when they had always been very stable. I saw strange goings on in my log files, but I could not interpret them to find out what was happening. I finally left NANAM, and the hacking stopped within days. I also stopped spamming Usenet, but not because I thought it was wrong.

Fast forward to earlier this year. I had a client, a respected manufacturer of stoves and fireplaces, who wanted to try his hand at direct email advertising. He had seen an advertisement for one of those spamming tools that lets you harvest a gazillion names off of AOL, so he wanted to try that. He asked for my permission to do so. I tried to argue him out of it, if for no other reason than to keep my systems from being revenge-attacked again, but he wanted to try it and I ultimately let him. The end result was that he didn't get a very good return, and he was discouraged by all the hate mail that he got back in response to his spam. I got a single complaint, from a very angry person who made some legal threats. I allowed myself to puff up with righteous indignation again (do you begin to see a pattern here?), jumped onto NANAM once more, and began laying about with a Will, flaming any anti-spammers who came near me as I went on about why spam is good, why it is legal, and why my client should be allowed to do so. My points were pretty much the same as before: 1. It's legal. 2. It is therefore permitted. 3. It doesn't hurt anyone (if you don't like it, just delete it). 4. It is for a legitimate product. 5. The owner of the mailing list will cheerfully delete anyone who requests it. 6. What gives you sanctimonious S.O.B.'s the right to sanction me, anyway?

This time, I got into a tangle with some of those people you've mentioned in your article, as well as some intelligent people whom you left out, like Tim Skirvin, Chris Lewis, and a few others. I still didn't agree with them, but I could at least debate them, and I had to admit to some of their better points, when I could not defend them.

Then something funny happened.

Due to my increasing activity on Usenet, my email address got captured by a few dozen 'spambots' and I began to get spam. Mucho spam. A whole lot of it.

I started to see what the 'rabid anti-spammers' were talking about. I was (and am) getting between 10 and 30 spams a day. They drowned out my regular email. About 90% of them were for MLM Ponzi-schemes, and the rest were for websex sites. I could spot some of them from looking at the subject lines and deleting them, but others were good at 'fooling' me with a deceptive subject line, like "Here's the web page you were looking for," or "I finally found that info for ya." A nuisance, to be sure, but still not all that terrible to deal with. I sorted them out as best I could, and ignored the problem. I also used the "reply to this address to be deleted from our list" method whenever it was offered in the body of the spam. I began to notice that almost all of those replies bounced, because the "reply-to:" addresses were bogus. Those that did accept my "remove" requests almost always began spamming me in earnest, sometimes dozens of times per day, the same ad, from the same address. I could not believe it. Did the spammers think that if I was not going to buy their product or service from one ad, that I might have a change of heart if I got twelve of the *&#$ things?

I started to complain to postmasters about the spam. I found through investigation, that most, if not all, of the spam I was getting was being routed through "hijacked" SMTP servers, as you noted in your article. I got fairly good at reading headers and tracking spammers that way. I also "followed the money" and complained to postmasters of ISPs where the spammer was directing people to go to, or looking for matching domain names that 'fit' the PO Boxes where we victims, er, customers were supposed to send money to. I got some spammers 'squished,' and I also got a lot of angry ISPs who defended their client's actions the same way I had when my client spammed. I also got threatened, mailbombed, and hacked, apparently this time by the spammers. I even got "reverse spammed," which is where spam is sent out that has been altered to look like some innocent victim has sent it. The intent is not to sell the product or service, but to harass the victim when the outraged anti-spammers call or email to complain. Some anti-spammers have become so knee-jerk that they flame first and ask questions later, so this is often an effective tactic. I've even accidentally flamed some of my own people that way myself.

I had to confront my own hypocrisy. On the one hand, I had defended spamming when it involved my clients, but I was learning to hate spam when I got it myself. What was the difference? In my case, at least I could say that my clients were legitimate, established retailers, selling real products, but that doesn't mean much on the Internet. I had to conclude that if sending MLM spam or websex spam is bad, then all spam is bad. I changed my mind about spam, and officially became a rabid anti-spammer.

I think I understand the arguments pro and con, and it is still difficult to reconcile the two. When dealing with someone who is intelligent and well-spoken, like Phillip Lawlor, I find it difficult (but not impossible) to nullify his arguments. On the other hand, with people like Sanford Wallace, we're not talking about logic and rational argument, we're talking about good and evil. It is my contention that Sanford Wallace is evil. Let me explain...

Sanford is being taken at face-value by most media types, and I am greatly offended. I have written email to several of them, explaining why Sanford is "not to be trusted," but I get the brush-off. You're the only writer I have seen to date that actually prints rebuttals to what Wallace is saying (thank you VERY much).

Wallace makes the following points in his statements:

- Spam is not really that much of a problem, you can just delete it if you don't want to read it. The truth is, if you're on AOL, or active on Usenet, or have posted your email address on a 'feedback' form on a web page somewhere, you're probably on about a gazillion lists, lists which are being sold and traded back and forth at a furious clip. You'll probably end up getting between 30 and 60 spams a day, every day, holidays and weekends included. That is a problem.
- Most spam contains the instructions necessary to remove yourself from the spammer's list. Most reply-to: addresses are bogus. The ones that are not are almost universally spam-traps, designed to isolate people who take the time to complain and put them on a special 'validated' email list, which fetches even more money when they sell their list.
- Most people do not hate spam. An obscene twisting of a recent survey, in which a small minority of people who responded went as far as saying that they "hated" spam, but the majority replied that they do not like spam. In this case, Wallace is playing semantics.
- Wallace has recently helped to found the IEMMC, an independent organization that will 'self-regulate' spam, and manage a 'universal' remove list. That will solve the problem. The IEMMC is a blatantly self-serving attempt to avoid being regulated by the federal government. The 'remove' list does not work. Repeat, it does not work. None of the email addresses listed as being for complaints that it does not work are functioning, either. This bogus organization is SO transparent, I am amazed that no journalist has taken Wallace to task for it yet.
- The IEMMC has recently announced a 'moratorium' on spam from it's members until such time as the universal remove list is fixed (you know, the one they say works now). The anti-spammers in NANAE have documented hundreds, if not thousands, of spams from Cyberpromo and Wallace's clients SINCE the 'moratorium.' The IEMMC steadfastly denies that it is happening, and says they want 'proof.' No such proof submitted has been accepted. Walt Rines, spokesman for the IEMMC, has posted on NANAE that IEMMC never meant to include Cyberpromo's postings through "other" servers (meaning hijacked ones) in it's moratorium, only the ones through AGIS (which Cyberpromo has also done since the moratorium). He later amended the statement to say that Cyberpromo is not the one breaking the moratorium, Cyberpromo's clients are, which IEMMC has no control over. Can you smell the BS here?
- Wallace has decried the hijacking of other ISP's equipment to send spam. He did, and still does, do it all the time.
- It is legal, and therefore, permitted. The act of spamming may still be legal, but due to these abuses, that may change soon. In addition, they types of spams sent are almost all MLM/Ponzi schemes, which are most often illegal on their face.
- Anti-spammers don't have the right to stop him. He does not have the right to stop anti-spammers from expressing their heartfelt convictions in a lawful manner.
- Anti-spammers are attempting to destroy his business, defame him, and hack his computers. He's got a point on this one. Some undoubtedly are. While some would say that he's got it coming, I tend to disagree.

I hope you can see that Sanford Wallace is a menace, not just to the 'rabid anti-spammers,' but to his own cause, as well. He's an embarrassment, and even Mr. Lawlor has expressed disappointment in Cyberpromo's actions, which have undermined the efforts of AGIS to make spam seem somehow respectable.

In conclusion: I think that unsolicited commercial email (UCE) might have ended up with a valid, if unappreciated, place on the Internet, if the schlock-merchants and crooks had not all jumped on the band-wagon at one time and driven it down. And now that the spam ship is sinking, Cap'n Spamford is ordering the IEMMC to re-arrange the deck chairs. It is unfortunate that we will most probably end up with a restrictive law of one type or another, which will take away one more freedom on the Internet.
Of all my freedoms, though, the one I value most is the freedom to be left alone.

Sincerely,

Bill Mattocks
Computer Solutions of Kenosha
2031 22nd Avenue
Kenosha, WI 53140
(414) 551-8088

PS — Hi, Jack! You probably don't remember, but I have been reading Boardwatch since it was stapled together ('86 or '87, something like that), I ran an 'elite' Telegard (later TBBS) board called "The Psyclone" in Denver for years, and I've chatted with you at various BBSCons and ISPCons many times. I'm a friend of Adam Hudson and Phil Becker, used to sell them PCs at MicroExpress in Englewood. I remember the 'nixpub' list of free ISPs, and still have my old account on nyx.cs.du.edu (now nyx.net), dating back to '88. You owe me one, although you don't know it ~ last summer, I saw you trying to eat lunch at Red Robin in Lakewood, while reading a book at the same time. I recognized you and LEFT YOU ALONE! Bet you're happy now! Anyway, I wanted to say hello again, and tell you how much I have valued your magazine over the years. You're the only one who 'gets it.' I rely on your opinions, and have learned not to question. I sometimes don't follow your logic, but damned if you're not always right. It's good to finally have something to write to you about.

Bill:

Very good to hear from you. Next time I'm eating and reading, go ahead and bother me. I'm eminently botherable — particularly by anyone with an interest in the network.

Your letter is one of the best we've ever received — primarily in that it shows in a very artful fashion the binary nature of SPAM. A little SPAM is no problem. Just delete it. But 60 per day gets to be really annoying. And what happens when that grows to 600? Or 6,000? We can actually kill the concept of e-mail with this. The machines will happily deliver billions of messages per hour in aggregate.

Similarly, I strongly object to the concept of scapegoating Internet service providers and making them the little SPAM police — complete with tin badge and little chrome six shooter. It simply should not be their task to police content.
The current legislative proposals regarding spam are promising, and slightly dangerous. Modifying the concept of free speech, even in obsequiously well intentioned fashion, can be troublesome. But if we COULD make it illegal to send SPAM that didn't have a SPAM TAG on it, we could then filter effectively from the user end. The other option is to end the concept of free e-mail. IT is so deeply ingrained in the system, I'm pretty sure it just couldn't be done without again calling for legislation.

Either way, the legislative option is starting to have an appeal. The attacks you

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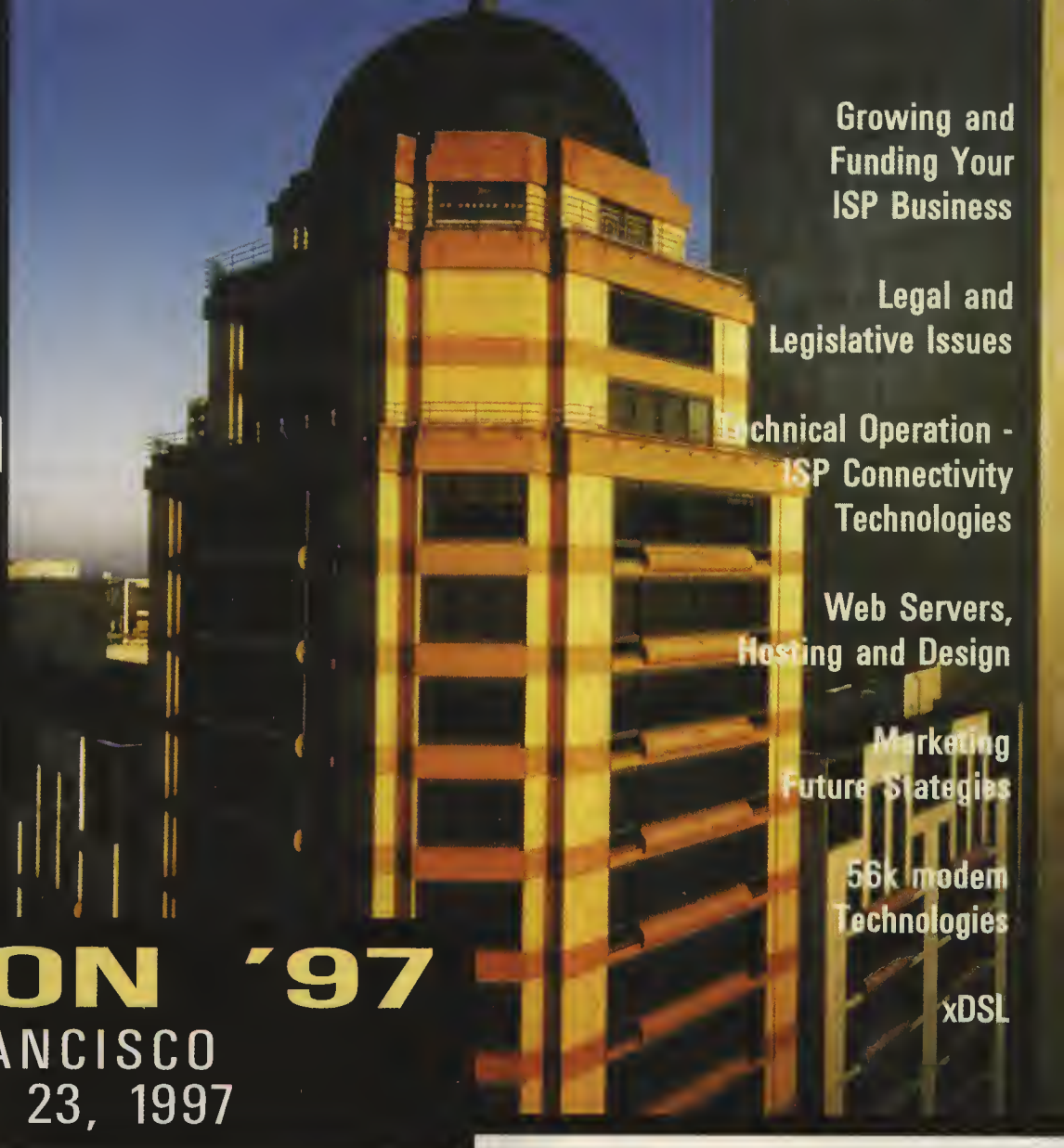

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experienced are the first signs of an Internet "mobocracy" that can do nothing but evil. I'm finding anti-spammers with their sneak attacks actually more obnoxious and insidious than the spam itself. Some percentage of spam originates from naive people who have the not very original idea that they can make millions using free e-mail to promote their product. The anti-spammites are knowingly doing an evil and violent thing.

The most aggravating aspect of this problem is that no two Internet citizens can seem to even agree on a definition of SPAM. I regularly see e-mailed alerts to existing customers and people with standing business relationships referred to by unknowledgeables as SPAM. One Internaut's SPAM is another's paid subscriber service.

In any event, your letter illustrates a lot of aspects of the problem very artfully. For the thoughtful, this is a genuinely thorny problem. For the shrill and moronic, well, we'll always HAVE the shrill and moronic to weigh in on any issue anyway.

Regards;

Jack Rickard

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ON ISPCON 97

I put up a link of your On ISPCon 97 at: http://aspac.com/www/jaimeso/bcisps.html

Just one of the many ways for me to say: "I Love your Zine"

Keep it up,

Jaime
p.s.: How about a free 476-page Dir of ISps for me. I am an avid subscriber since '95 :-)
You got it Jaime. Thanks for the link.

Jack Rickard

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US WEST STIFLING DATA ACCESS COMPETITION

I suppose this is probably well known to most readers of this list, but for me it is new: the things US West does to stifle competition for local loop data access.

An article in the June 9 issue of Network World describes how some enterprising folks in Iowa decided to order a bunch of burglar alarm circuits and place DSL equipment at both ends. The burglar alarm circuits are basically copper pairs and in Iowa, according to the article, such circuits cost $25 per month. The URL for the article is

`<http://www.nwfusion.com/cgi-bin/gate2?|wwqi/GP81XZ9G/G7PX/wrwkHZ3Gd.tdbEwqw FGP81XZ9GVWVyxvhuUMph,BII7i3tE, xvhu4Mvvzg,96OZ91X>.`

Well, it seems that after these folks started making sales calls on potential customers, US West pulled the plug. The article says US West has decided to stop providing burglar alarm circuits to anyone, anywhere in its 14-state region. (I expect this includes Colorado.)

Common sense suggests, of course, that such service ought to cost less than a regular dial tone phone line, since there is no need for the telco to provide dial tones, or interoffice trunks for call completion, etc.

This may explain why I got such a runaround last week. I called up US West, rather innocently asking what it would cost to obtain a simple copper pair between two points in Summit County, Colorado. (Where, I note, there is no ISDN let alone DSL service from US West.) After forty-five minutes and half a dozen people, I was connected with Mr. Bob Parks. He repeatedly tried to sell me lines with dial tones on them, asking whether I wanted touch-tone, etc. I kept trying to ask if I could just have the copper, thanks, and no dial tone. (Recall the movie Five Easy Pieces in which the fellow wanted just toast.) Anyway, after some minutes of Mr. Parks dissembling and saying he'd have to check into it and have someone call me, I figured, well, why don't I try asking for an alarm line.

Suddenly Mr. Parks was able to quote the price, $16 per month, and the installation price to the penny. Amazing how previously he couldn't help me and would have to check into it, and now all of a sudden when I say the magic words "alarm line" I get prices to the penny.

Well, I then pressed a little further, asking if there was any other way I could get the use of a copper pair. No, there was no other way. But he had some nice lines with dial tones on them if I was ready to change my mind and take dial tones. And of course I was encouraged to sign up for US West's frame relay service. But no, no other way I could get a copper pair.

What about LAD, I innocently asked?

Oh, suddenly the fog lifted a second time and Mr. Parks was able to quite prices to the penny. A 2-wire connection was $24 per month, and a four-wire connection was $51 per month. And he was able to say what the acronym stood for: local area data line.

I asked why it was that he had previously denied the existence of any other way to get a copper pair, and why it made such a difference that I had mentioned the magic word LAD. He squirmed a bit but otherwise gave no overt acknowledgment that he had previously concealed things from me.

This whole thing really annoys me. I was under the impression that telcos are now obligated to unbundle things like copper pairs and subscriber loops. Instead, it appears that US West is doing all within its power to stifle such things.

Any comments or suggestions?

Carl:

Actually, and rather immediately subsequent to our March editorial regarding US West's ridiculous assertions to the Washington state PUC regarding ISPs clogging the voice switch, US West has filed to remove LAD circuit tariffs in several states — we think Colorado the first. Recall from the editorial that we noted that if US West was sincerely concerned with data activity on the voice switch tying up the switch, they should be EXTREMELY supportive of any efforts to deliver access over LAD circuits. Their response, with amazing predictability, was to file to remove tariffs for such circuits. It is utterly pathetic.

In any event, we have a LAD circuit and are in Colorado. So we have filed to intervene with the Colorado Public Utilities commission. A public hearing will most likely be held September 5th. We will muster all Colorado ISPs (call Todd Erikson at Boardwatch at 800-933-6038 for more information) for this evolution and I do intend to prevail. Some of the xDSL equipment people are going to join us as Colorado appears to be the quickest to move on this issue.

The dissembling you note in your conversation with Mr. Parks is neither accidental nor isolated. It is by design across the company. I rarely go so far, but in this case I rather will. These people are slime


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maggots of the worst possible filth. They wouldn't have anything to do with aiding and abetting Internetworking years ago with the constant refrain that there was no market for it. Now that there is one, they will stoop to anything and stop at nothing to prevent anyone else from serving it. They STILL have never come up with any sort of viable strategy to serve it themselves in ANY useful fashion. Ergo the term MANGER DOGS. They cannot eat of the hay, but they will not allow the cattle to feed either. Utterly reprehensible behavior.

Their own widely announced and grossly overpriced $175 per month ADSL service remains unavailable to any non-employee humanoid on the North American continent as far as I can detect.

You may take small comfort that within just a few years Mr. Parks and most of the executives making such decisions will be serving popcorn and tapes over the counter of the local video store, while better and brighter provide communications across the land. But I know it is small consolation of the moment.

Jack Rickard

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Jack:

As you know, I've been a reader of **Boardwatch** for years, and have attended all of the BBS/ISPCONs since my first in Colorado Springs some years ago, and have found both Boardwatch (with your editorials) and the 'CON's both fun and informative.

I do, however, have to take a whack at you for one portion of your June editorial, particularly since it smacks highly of an unjustified personal attack on Dave McClure of AOP and on the AOP itself, and partly because you didn't bother to tell the whole story.

Members of the AOP were notified vie email bulletin of a far different and much nastier FCC plan that was to be ratified only a few days from the notification. The FCC under Reed Hundt had apparently taken it upon itself to set policy and, essentially, taxation ("fees") not only without notifying the public at large of its plans, but also, in some cases (rumor has it), without notifying the appropriate congressional subcommittees prior to making the announcements. One wonders about the timing of Reed Hundt's resignation, only two days after these fees were announced.

In any case, AOP members and others soon filled email boxes and fax bins at the FCC with protest and requests for reconsideration and/or delay. The policy that the FCC finally unveiled was not what we wanted, but was far less harsh than what might have been. The FCC explains that what they take away in increased per-line access fees for business lines, they mostly give back in reduced long distance charges. ISP's, of course, get nothing back in reduced long distance charges; they just pay the additional money per line. An ISP with 200 lines will simply see his telephone bill go up around $10,000 a year.

The universal access fund has virtually put a stop to the free access some ISP's were offering schools, libraries, etc, and I doubt we'll see another internet wiring day again. Schools will essentially be required to pay for what many of them had been provided free. So much for communities and businesses taking care of their own.

Your assertion that $2 billion dollars a year is going to be headed back to ISP's is probably incorrect. A very small portion of that will actually be headed back toward ISP's anytime soon. It's been estimated that the cost of simply wiring up all those schools and libraries will be in excess of $100 billion. At $2 billion a year, what does your math tell you about how long it's going to take to get all those people online? While the ISP's wait, they're still paying some serious change in the real world. "Sign you up," indeed.

The attack on Dave McClure was unprofessional, unwarranted, inaccurate, and personal. The attack on AOP was misguided and warrants some rethinking on your part.

The AOP has done a hell of a job getting itself noticed and respected and, finally, consulted by congress (and other groups) on issues that affect online professionals. That's no mean feat, especially given the resources they have, and I know of no other online professional organization that's done as well. They've given back to their members, as well, in the form of alerts, opinions and newsletters, and those members are better and more immediately informed about impending legislation and its possible consequences than any other online professional organization I can think of. They've also done a pretty good job of representing their members on professional issues, such as copyright and software piracy.

No one in the organization has ever suggested that immediately joining the AOP is the only salvation for the Internet service business, of course, and while I realize that you're simply exercising your poetic license with largesse, I know your magazine and opinions are respected and considered within the organization, by McClure and members alike. I don't understand why you'd wish to alienate those whom you wish to influence. Or, more commonly, why would you want to piss off your own choir?

I'd suggest joining the damn organization. Bury the hatchet, whatever it is, with Dave, and give us all a hand. I appreciate you and Boardwatch. You've never been afraid to jump in and try to make something of the industry in the past, and that's where BBSCON came from. I personally think ISPCON has grown into something quite different, and has a life of its own.

You're needed elsewhere.

Thanks for listening!

david

— David Spellman Futuaris Non Irresus Ridebis

David:

Thanks for the unbiased commentary on the AOP. As a long time reader of Boardwatch, you are undoubtedly aware that there are no sacred cows here. I don't mind at all alienating everybody on the planet.

The remarks vis a vis the AOP were rather directly pointed at their current position on this issue, which was clearly and publicly delineated, and with which I strongly disagree — hopefully as publicly and as clearly. Your math remains problematical. If ***$2 billion*** *goes to connect these entities to the Internet, and by your methodoligically unassailable I am sure estimate it will require an actual* ***$100 billion*** *to do so, how does this cause LESS to go to Internet service providers? This is a very common technique in government, and in places can be effective. Schools et al have been obdurately slow to make these connections. Those who have have done so to good effect in almost every case. And if Mr. Hundt can persuade the rest with a bit of seed money as a motivator, it would*

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probably be effective. It has been very effective in the past to such a degree that almost all government money for programs happens about this way. They rarely fund all of anything. They almost always seek to leverage a small amount of money to cause a large amount of money to happen. It generally works because their small amounts of money are frequently very large to my way of thinking. You gasp at ***$10,000,*** *and sneer at* ***$2 billion,*** *in precisely the same sentence. More in context is the comparison of what was done to what might have been. The demand for ISPs to pay per-minute access fees to RBOCs after the fashion of long distance companies was not an automatically doomed concept. It would have been very bad for the Internet as a whole and the American consumer. But it is hopelessly naive to believe that everything that happens in Washington, DC is intended to be good for the Internet or good for the American consumer. The regional telephone companies are an immensely powerful lobby and get what they want more often than they lose.*

If you gain mental ease by belonging to "Dave's Club" I say go girlfriend. I have found them consistently wrong on almost every issue.

I cannot fathom your reference to ISPCON. It is in all respects similar to BBSCON, and this year enormously successful. It is a serious load on time, but eminently worthwhile in my estimation. We are actually bringing together this year small Internet service providers, large Internet backbone companies, regional Bell operating companies, and the vendors who serve this widely divergent group, to greater degree than we have ever before accomplished. This year's event will clearly be the largest, while still the most focused, gathering of Internet service providers ever convened with ISPs from over 40 countries in attendance and at all levels of size and operation. And my experience is that many good things happen for the industry just by getting them all together for a meeting. What would you imagine would be a better use of my time?

Jack Rickard

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EUROPEAN ISP INFO

Jack,

I've recently been turned on to your publication and am impressed with its content. (I will be subscribing) Do you plan to cover the European ISP market as well? Do you know of other sources for info on the European ISP market (companies by markets/customer demos, acquisitions, etc.) that I could pursue?

Any help you can provide is greatly appreciated.

Regards,

Chris Lee
Mgr, Financial Analysis
Teleglobe International
`clee@Teleglobe.CA`

Chris:

We have a new columnist coming onboard to cover the European beat. But I doubt we will ever achieve the market data that we have in the United States. We are also dabbling in South America.

Jack Rickard

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Teddy Roosevelt. Panama Canal. 1913.

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INTERNET BACKBONE MEASUREMENT RESULTS

by Jack Rickard

Despite the conventional model that the Internet is totally interconnected, there is a vague unease across the Internet that "all Internet is not created equal." If it is, some are clearly equal-er than others. And at different times, the network "feels" different. Some days it's pretty snappy. On others, the world wide wait just doesn't seem worth the wait.

But sales claims regarding Internet quality of service can be based on anything and everything, and too often are based on nothing verifiable. If you, as an ISP or as a company seeking a dedicated connection to the Internet, seek empirical information on which is the best network, you will hear any number of theories about how much is being invested in infrastructure, how many "hops" a route can take across a network, the bandwidth capacity of links between cities, and a confusing array of diagrams depicting the latest theory of how a hub should be constructed. You won't receive any comparative performance data of any merit.

That's because there hasn't been any.

We have studied this problem for nearly two years, had detailed meetings with some of the top minds at Cisco Systems and other networking hardware vendors, and many of the old guard netheads. Most solutions involved some degree of cooperation with the backbone operators, who are uniformly reluctant to provide any data that might counter their often grandiose sales claims. The few locus in the network where such measurements could be easily made, the NAPs and Merit Inc. for example, find it too hot to handle politically. A couple of companies have done some minor work, and generally sought to sell reports to the principles studied for **$50,000** or so. No one is doing any substantive work on behalf of the end consumer or the general network.

The main difficulty in measuring the Internet is to keep from measuring yourself more than the network under measurement. Measurements we could do from here at ***Boardwatch*** would depend on our own connections to the Internet. Any valid measurements would require multiple perspectives or "points of view" from various locations both geographically and across network topologies.

Keynote Systems (`http://www.keynote.com`) markets a service to largish web site administrators designed to monitor performance of their web sites from the perspective of the population of users across the network. The system currently has machines located in some 30 cities on differing networks that periodically download text from web sites and measure the download times. The cities and networks where these "agents" are located is designed to roughly represent the user "footprint" across metropolitan areas and networks. The company is in the process of expanding this series of agents to 96 and globally. The agents all report, over the network, to a central database server which collects the data. A client program, written in Java, taps this central SQL database server to allow customers to usefully look at graphs and summaries of the data. The results can be fascinating.

For the July/August issue of our ***Directory of Internet Service Providers***, we collaborated with Keynote Systems to measure backbone performance. By redirecting their measurements at the home web sites of 29 backbone providers, we were able to measure the responsiveness of the various networks. By doing so over time, roughly 30 days, we have amassed a collection of measurements representing some 1,747,323 test downloads of 10 KB blocks of data. We reduced these 1.7 million data points to about 20 pages of graphical data in the directory on 29 backbones illustrating what we believe is a relatively true picture of network performance. We believe it is the first attempt at Internet performance measurement ever published on this scale.

So we can see that sampling is a little more complicated than described, and that in fact some 35 agents were used across 27 cities, in an attempt to roughly simulate the distribution of customers on networks.

This methodology does a couple of things. Making Internet measurements from any one place on the network is useless. You're doing more to measure your OWN connectivity than anything else. By measuring from a significant number of "points of view," the vagaries of any one location are eventually factored out. If you select points of view with an eye toward the actual "footprint" of the Internet user population, the points of view cumulatively represent the point of view of the network as a whole — more or less.

The Internet is essentially anomalous. It varies sufficiently that the event of packet delivery itself becomes an anomaly. You can visualize this more accurately by noting that if any particular packet DOES arrive at it's assigned destination, a minor miracle has occurred. As a result, ANY measurement at any particular time is ONLY representative of that particular instant. It has little statistical value in the NEXT instant. By taking measurements every fifteen minutes, four times an hour, 24 hours per day, across 30 days, our objective was not simply to impress you with the gravity of 1.7 million data points. It is an attempt to develop a massively averaged waveform over a month that fairly represents or summarizes a networks RELATIVE performance.

And that is almost the only value such measurements have. If we use roughly the same methodology on each backbone over essentially the same period of time, the results have no intrinsic quantitative value at all. Nobody has a norm for what the Internet SHOULD work like. But they CAN be used to compare what happens on one network to what happens on another — in a relative sense.

And the result of all this massive average across both calendar and metropolitan area is what we feel is an ultimately fair and unassailable view of network performance. It is a bit rough because the mission is to smooth-out the anomalies. As a result, a particular network could actually be out for a couple of hours without moving the numbers more than a few points.

METHODOLOGY

For each network, download measurements of 10 KB were made every fifteen minutes from 27 cities, 24 hours daily. Web sites featuring less than 10 KB of text on the home page were scaled. The data for any period was averaged to develop an average download time in seconds, and a standard deviation, for each period. This data looks textually something like this:

START	STOP	AVG	STDEV	SAMPLES
05/18/97 09:00 a.m.	05/18/97 01:00 p.m.	3.0	2.694	336
05/18/97 01:00 p.m.	05/18/97 05:00 p.m.	3.049	1.902	353
05/18/97 05:00 p.m.	05/18/97 09:00 p.m.	7.199	45.106	346
05/18/97 09:00 p.m.	05/19/97 01:00 a.m.	2.779	2.117	341
05/19/97 01:00 a.m.	05/19/97 05:00 a.m.	4.015	19.21	319
05/19/97 05:00 a.m.	05/19/97 09:00 a.m.	4.054	8.865	339

The cities and networks where the sampling agents were located is provided below:

ATL	**Atlanta, GA**	MCI
BOS	**Boston, MA**	UUNET
CHI	**Chicago, IL**	GoodNet, MCI
CLE	**Cleveland, OH**	Sprint
CMH	**Columbus, OH**	MCI, Sprint
DFW	**Dallas, TX**	CRL
DEN	**Denver, CO**	BBN, Sprint
DTT	**Detroit, MI**	MCI
HOU	**Houston, TX**	AGIS
MKC	**Kansas City, MO**	MCI
LAX	**Los Angeles, CA**	UUNET, Sprint
MIA	**Miami, FL**	BBN
MKE	**Milwaukee, WI**	BBN
MSP	**Minneapolis, MN**	MCI
ORF	**Norfolk, VA**	Sprint
NYC	**New York, NY**	UUNET, Sprint
NYC	**New York, NY**	MCI
OMA	**Omaha, NB**	Sprint
PHL	**Philadelphia, PA**	AGIS, CRL
PHX	**Phoenix, AZ**	MCI
PIT	**Pittsburgh, PA**	MCI
PDX	**Portland, OR**	ELI
SLC	**Salt Lake City, UT**	ELI
SAN	**San Diego, CA**	AGIS
SFO	**San Francisco, CA**	MCI, Sprint
SEA	**Seattle, WA**	UUNET, MCI
WAS	**Washington DC**	AGIS

The resulting data samples can vary. Some cities have more than one agent, posted to more than one network. Network agents are distributed as follows:

MCI	**11**
Sprint	**8**
UUNET	**4**
AGIS	**4**
BBN	**3**
ELI	**2**
CRL	**2**
GoodNet	**1**

The web site download approach would at first glance seem to be a weak point here. But ultimately, we think it is a strength. Most network performance that anyone is interested in is web access. And how well a network operates technically behind the curtain is of lesser interest than in how it looks to the end user viewing web pages. If a particular network cannot operate their own home web page to operational efficiency, they probably can't do very well with yours either — or run a network for that matter.

Despite the huge amount of work involved in this project, our main fear was of flat-lining the Internet. Everything was so massively averaged, that we could have very easily wound up with no relative differences — i.e. all networks ultimately looking identical over time. We actually viewed this as THE MOST LIKELY OUTCOME from all this effort. Not to worry. The fact that relative network performance varies as dramatically as it does is in itself an almost astounding revelation. Some Internet truly IS equal-er than others, and to startling degree.

SUMMARIZED RESULTS

For this issue of ***Boardwatch Magazine***, we've prepared several tables of the resulting data in simplified form that should prove useful in shopping for a backbone connection.

The first graph depicts AVERAGE DOWNLOAD TIME. The actual measurements were used on 10 KB blocks of data from the home web page of the backbone under measurement. This was multiplied by a factor of five to simulate a typical 50 KB home page. The average time to download a web page for each backbone is listed on this graph. Each value represents an average across about 60,000 measurements taken from the 27 cities in aggregate across a 30 day period corresponding to roughly April 20 to May 20, 1997. The results vary from an average of 1.543 seconds for the CompuServe Internet backbone, to a high of 26.767 seconds from Bell Communication Services in Canada. The average of all networks measured was 9.928 seconds for a 50 KB download. As best we can tell, that's how fast the Internet is — about 5 Kbps.

This is a bit interesting. Everyone is trying to develop a means to get 2 Mbps bandwidth to the home. Note that all agents are connected to the networks via T-1 or better connections — there is no dial-up component to these measurements. But the best data rate that can be achieved is CompuServe's 1.543 seconds indicating 33,182 characters per second or roughly 300 Kbps. The average Internet experience is more on the order of 5,150 cps or 50 Kbps. Improving dial-up substantially beyond, say 100 kbps, at this point is not going to offer a substantial improvement in the web experience for end users until backbone connectivity improves dramatically.

This is clarifying for me personally. We have several 1.544 Mbps connections in the office at this point to several backbones. At home, I have a 128 Kbps ISDN connection. In viewing the web, I just wasn't seeing things getting better at the office compared with home. It's now apparent why. It was NOT just one of those perceptual thresholds — it actually ISN'T any faster.

In the averages graph, we colored the result bars for clarity with all results less than 50 percent of average as green, all results between 50 percent of average and average as yellow, and all results above average as red. Makes a pretty chart, but it doesn't mean much beyond that. Green is good. Red is not very good. Smaller values are of course better.

We found the Standard Deviation values the most interesting. Despite the difficulty in explaining what they ARE, we present them here for your use. Basically, we think of them as showing performance under load. Recall that measurements are taken each fifteen minutes around the clock. It should be intuitive that the Internet performs much better at 2:00 a.m., when everyone is asleep or should be, and 2:00 p.m., when everyone is on the Internet (or should be). Further, access from all cities is not uniform. Dallas Fort Worth and Phoenix are not the ideal points on the planet to be accessing the Internet from. San Diego isn't much improvement. Denver, Atlanta, Chicago, and San Francisco actually aren't bad. A good feature of network design would be reasonably consistent access across most major metropolitan areas.

Standard Deviation shows the standard deviation from the average of course. At 2:00 a.m., the measurement from one instant to another fifteen minutes later produces a similar result in most cases. At 2:00 p.m., large variations are observed. We average the deviations as well across the month to come up with a now several steps removed standard deviation. A smaller standard deviation would represent a more consistent network. A larger deviation would indicate problems we think are caused by load on the network. As a result, we think of this graph as "Performance Under Load." Again smaller numbers are better.

Note that Networks such as SAVVIS Communications, CompuServe, AT&T WorldNet's brand new backbone, and GridNet have quite low standard deviations in the 13-20 second range. We were surprised to see networks with superb reputations, largely based on good public relations apparently, come in with a standard deviation of 61.833 seconds? Sprint IP Services, despite recent upgrades, was somewhat better at 34.831 seconds. ANS was worse at 70.469 seconds. But to have the worst deviation nearly 10 times larger than the best deviation is astounding.

We think this is a key point — though strictly theoretical. If you have a newly designed and altogether probably very nice network, with nobody on it, it should perform pretty well and the deviation could be expected to be less pronounced between 2:00 a.m., when nobody is on it, and 2:00 p.m., when there is STILL nobody on it. We know CompuServe, for example, has designed an Internet backbone with some thirty Cascade 9000 ATM switches. But their existing business is all on an aging x.25 network. Their efforts at marketing direct connections to business have been clumsy, and their pricing at $2,700 monthly is quite high actually. The result is a nice network, with no customers, and great performance. SAVVIS is relatively new with some interesting approaches to avoiding the official NAP architecture. GridNet too has done a much better job of designing and implementing than in selling.

InternetMCI alludes to OC-12 connections between some cities and massive infusions of investment in their backbone technologies and deployment. Their 9.851 average download time is disappointingly average, indeed it IS basically the average. But their standard deviation at 61.833 seconds, gives us a hint. They may have a fantastic network. But they have too many customers on it.

The analogy is rather of the nature of would you rather be on a brand new six lane concrete highway, or a two lane gravel road. The answer would appear intuitive that the six lane highway is

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better. If you are on I-25 in Denver about 5:00 p.m. on a weekday, this will turn out most fortuitous as you will have more than adequate opportunity to admire the architecture — as you sit at a dead stop in the road baking in the sun. At about that point, a nearly empty gravel road might be very attractive — particularly if you need to get anywhere.

Again on the PERFORMANCE UNDER LOAD graph we note an average of all networks at 49.594 seconds. Green is less than 25 seconds. Yellow is 25 to 50 seconds, red is over the average of 50 seconds.

The TOTAL PERFORMANCE graph is somewhat gratuitous. By simply multiplying the average download time and the standard deviation for each network we can accentuate the differences and derive a single total performance number. CompuServe is clearly the best performing backbone on the Internet at the moment with a value of 21.193. The average across 29 networks was 492.363.

We did prepare a graph comparing the price of a 1.544 Mbps T-1 connection to each of the backbones measured — as reported by the backbones themselves. This is the monthly recurring price. It does not include the local loop connection from your office to the backbone POP. It doesn't include setup or installation charges of any kind. If you have a T-1 to these backbones, this is what you would pay on a monthly basis to them. The results range from a low of $1,250 per month (Epoch) to a high of $3,000 per month (IBM Global Network and UUNET). It would be nice if you got what you paid for on the Internet. But we can see that at $3,000, UUNET provides some of the best performance, while IBM provides some of the worst — at the same price. And UUNET's performance is not noticeably better than SAVVIS Communications at $1,700 per month — slightly over half the price. The average price is $2,045.52 monthly

The final graph is titled BEST VALUES. We are at this time naming SAVVIS Communications the best value available in available Internet connection at T-1 speeds. How we determined this is an attempt to simulate what readers have to weigh in selecting an Internet connection to a national backbone — working from the price and performance data we have here and ignoring such things as customer service, sales, etc. which are significant components, but not readily quantifiable.

We think the most important thing in most reader's minds in selecting a connection will indeed be performance. But price is not in the "of no object" class. Price matters a lot. You can have TWO T-1s from Epoch for the cost of a single T-1 to UUNET, and in fact, have $500 per month left over. We note that the total performance figure averaged a value of 492 across these 29 backbones and price averaged $2,045. We simply took each networks performance figure and multiplied it by a factor of 8. On average, this gives us a value of just under 4,000 — roughly twice the average monthly cost. This would weight performance at 2/3 of the decision, and price at 1/3. Feel free to adjust this to personal taste.

We then took each individual networks total performance figure, multiplied it by 8, and ADDED the price to the result to derive a VALUE figure. SAVVIS Communications had a total performance value of 58.096 — third behind CompuServe's 21.193 and GridNet's 57.264. But SAVVIS was priced at $1,700 per month compared to GridNet at $2,480 and CompuServe at $2,700. I guess whether our formula for value works or not depends on whether you would pay an additional $780 per month to gain one point of performance — or $1,000 per month to get the very best from CompuServe. The actual computation of SAVVIS is 8 X 58.096 + 1700 for 2,164.76.

The remaining graphs published here show the detailed data for each backbone, both by city and across the 30 day period of measurement. These graphs are very similar to those produced by Keynote's client software for any web site. The city sites again use the green/yellow/red color scheme to denote performances less than half of the average value (5 seconds), those between half and average (10) seconds, and those exceeding the average. Note that city graphs will be on different scales for each backbone to allow geographical graphing across the very wide range of performances measured.

The calendar graphs are all on a 40 second scale and many measurements exceeded the scale and were allowed to run off. The objective here is to show a common and comparable waveform visually.

CONCLUSIONS

All Internet is not created equal. Your experience of Internet performance will depend very much on where you are located geographically, and what network you are connected to. And the differences are dramatic.

A broader conclusion can be tentatively reached that finding the GOOD part of the Internet is not quite as simple as finding the best or largest backbone with the most expensive equipment and the highest speed data trunks between cities. You can easily get dramatically BETTER performance on a smaller, weeny network. Performance looks like a function of an appropriately managed ratio of customer base (load) to the network architecture at hand. Unfortunately, most backbones consider the precise number of customers, and in some cases the network architecture, to be proprietary information. THEY DON'T WANT YOU TO KNOW.

This leads to an even broader conclusion. The future evolution of the Internet may ultimately be much better served by an increased number of smaller backbones, than a devolution toward fewer but larger networks more centrally managed. This is fortuitous since it seems to be what's happening. We counted nine national backbones in July of 1996, and over 30 national backbones today. To quote Martha Stewart, "That's a good thing." Or it appears to be so currently.

And shopping is worth it. There are bargains available. We were frankly astounded to find CompuServe as the top performing network on the Internet. This does not match the common perception. But we would have to pick it as the "Best Backbone" on the network.

As to bargains, SAVVIS Communications appears to be the place to get the good connection at a bargain price. We would name it the "Best Value" on the Internet.

It will be very interesting to see how performance numbers compare over time. We'll stay on the case.

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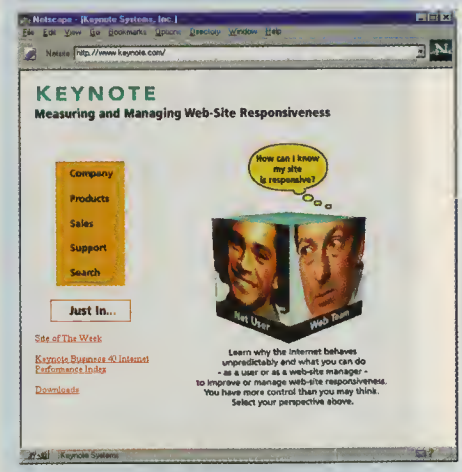
SUMMARIZED MEASUREMENT DATA

BACKBONE	Average	Std Dev	TotalP	Monthly	Value
SAVVIS	4.274	13.593	58.096	$1,700	2,165
CompuServe	1.543	13.735	21.193	$2,700	2,870
AT&T WorldNet	4.921	15.121	74.410	$2,100	2,695
GridNet	2.949	19.418	57.264	$2,480	2,938
GeoNet	5.108	19.778	101.026	$1,395	2,203
UUNET	3.473	20.978	72.857	$3,000	3,583
AGIS	3.267	21.782	71.162	$2,300	2,869
Genuity	4.851	25.512	123.759	$1,750	2,740
Digex	9.162	31.752	290.912	$2,295	4,622
VisiNet	6.934	33.167	229.980	$1,800	3,640
Sprint	7.464	34.831	259.979	$2,062	4,142
iSTAR	6.814	36.866	251.205	$2,220	4,230
IDT	5.519	39.145	216.041	$1,400	3,128
DataXchange	9.974	41.131	410.241	$2,300	5,582
Epoch	7.972	41.951	334.433	$1,250	3,925
CERFnet	10.521	44.210	465.133	$2,100	5,821
NapNet	7.223	47.785	345.151	$2,000	4,761
CWIX	8.879	50.665	449.855	$2,200	5,799
IBM Global Net	17.394	52.624	915.342	$3,000	10,323
BBN Planet	10.870	58.319	633.928	$1,995	7,066
GetNet	11.323	58.359	660.799	$1,500	6,786
internetMCI	9.851	61.833	609.117	$2,700	7,573
ANS	8.997	70.469	634.010	$2,000	7,072
NetRail	12.833	78.065	1001.808	$2,000	10,014
CRL Network	17.654	84.885	1498.560	$1,425	13,413
PSINet	15.867	88.818	1409.275	$2,295	13,569
Global Center	23.505	91.909	2160.321	$1,2950	18,578
GoodNet	22.000	114.705	2523.510	$1,899	22,087
Bell Canada	26.767	126.818	3394.537	$2,159	29,315
AVERAGES	**9.928**	**49.594**	**492.363**	**$2,045.52**	**5984**

About Keynote Systems



Keynote Systems, based in San Mateo, CA, is a leader in the development of web site response measurement and diagnostic tools.

Keynote provides web site management with a service called Keynote Perspective™ which measures the download response time of any number of URLs as experienced from over 35 cities in the USA and internationally. The data is viewed using desktop software downloaded from Keynote's site. Keynote customers can also measure the response performance of their competitors' web sites. The service costs **$795** per month for the first URL measured, and **$495** per month for each additonal URL.

For the ISP community, Keynote provides the following services:

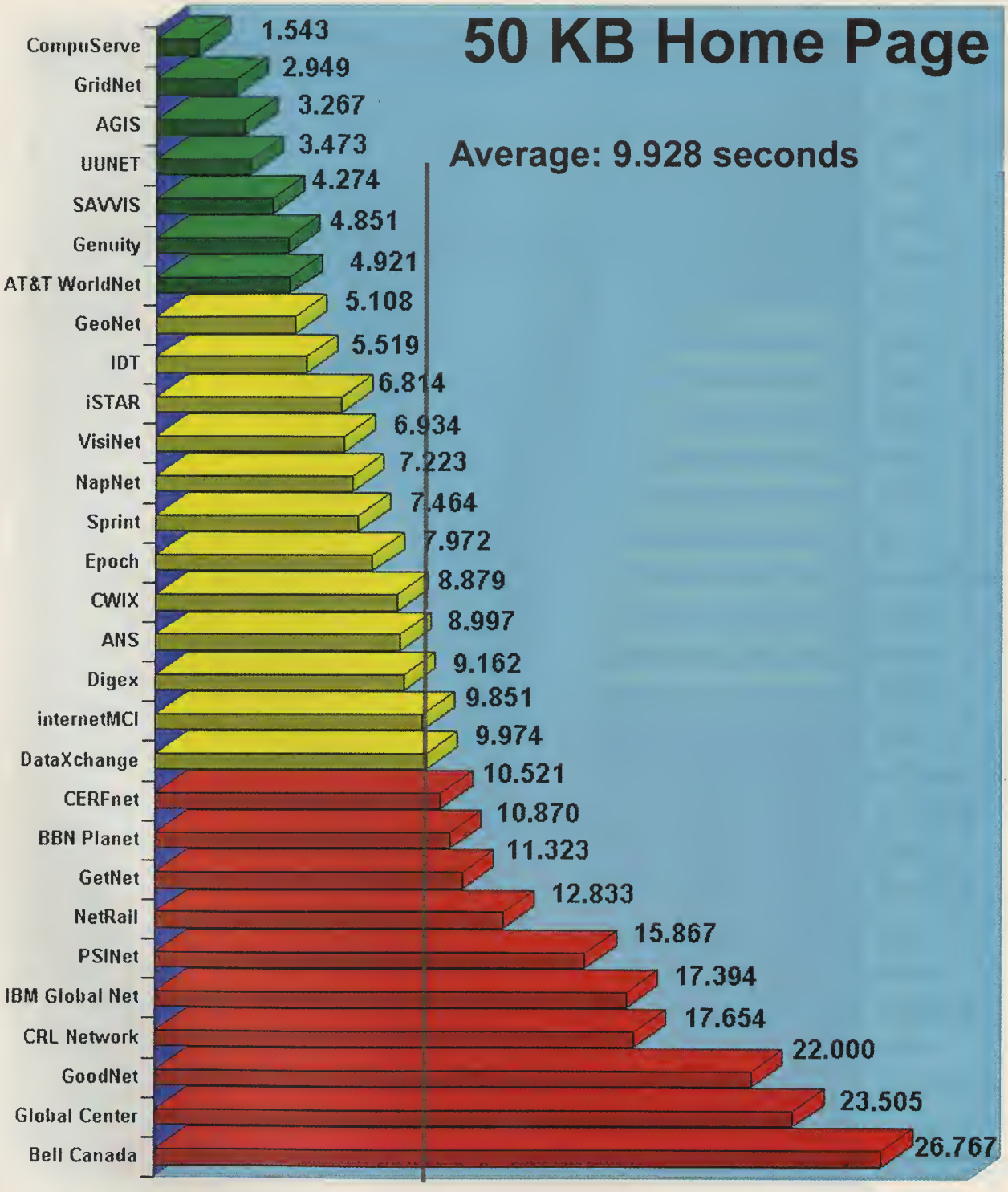
- A Comparative Performance Service, enabling an ISP to compare the performance of its network or its hosted web sites to those of its competitors. This has clear value in the sales process. The Comparative Performance Service is available to ISPs on a monthly subscription basis starting at **$2,500** per month.

- The capability to resell or reference sell the Keynote service to hosted web site customers. In this case the ISP or the ISP's customer receives substantial discounts, while the ISP gets access to the same data as is provided to the ISP customer. This avoids the situation where a customer may purchase the service directly from Keynote and blindside the ISP with the results. Keynote is actively looking to recruit reseller partners.

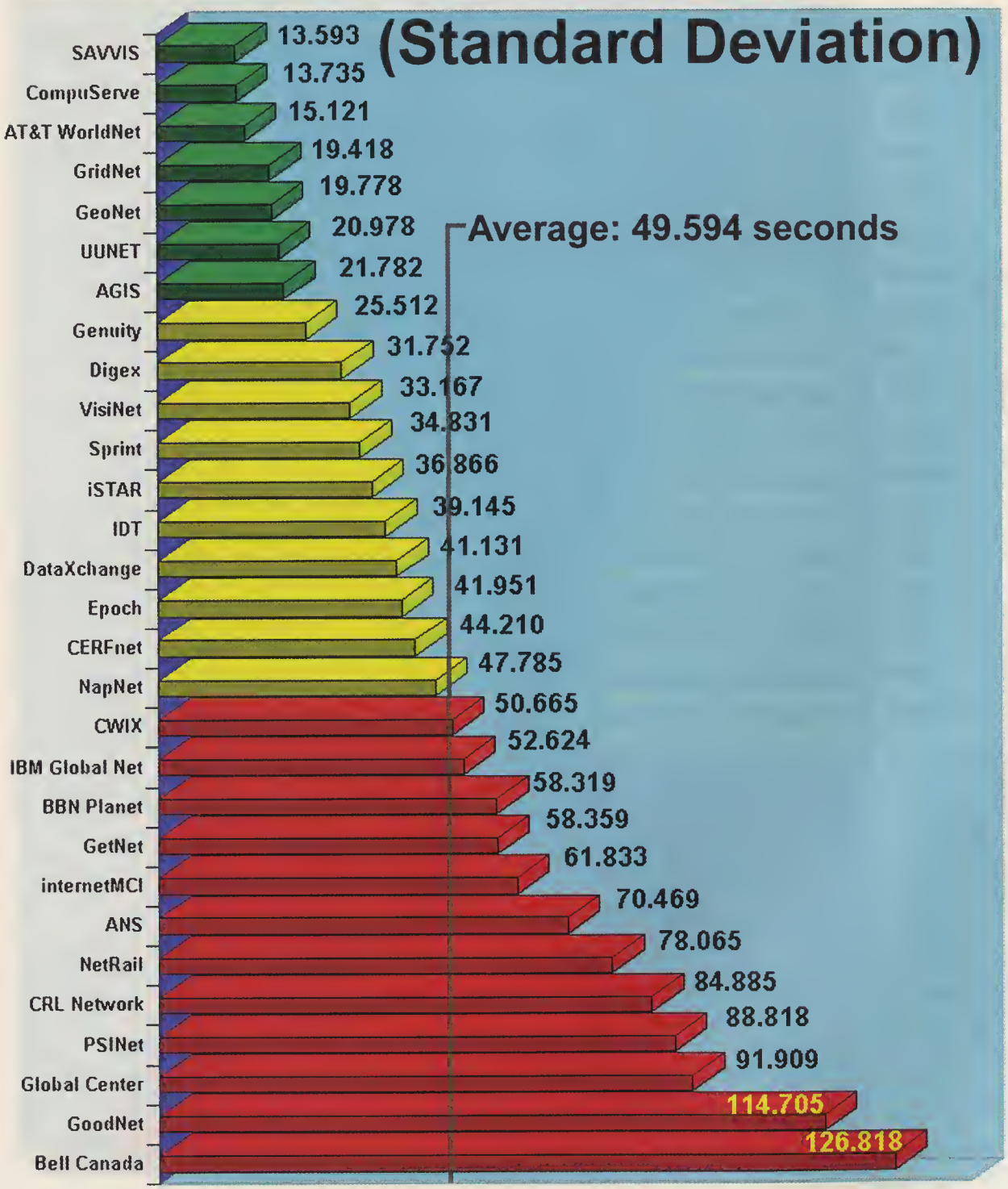
ISPs can contact Keynote directly by e-mailing David Talovic on `dtalovic@keynote.com` or calling him on **(415) 524 3022**. The Keynote general contacts are `sales@keynote.com` and **(415) 524 3000**.

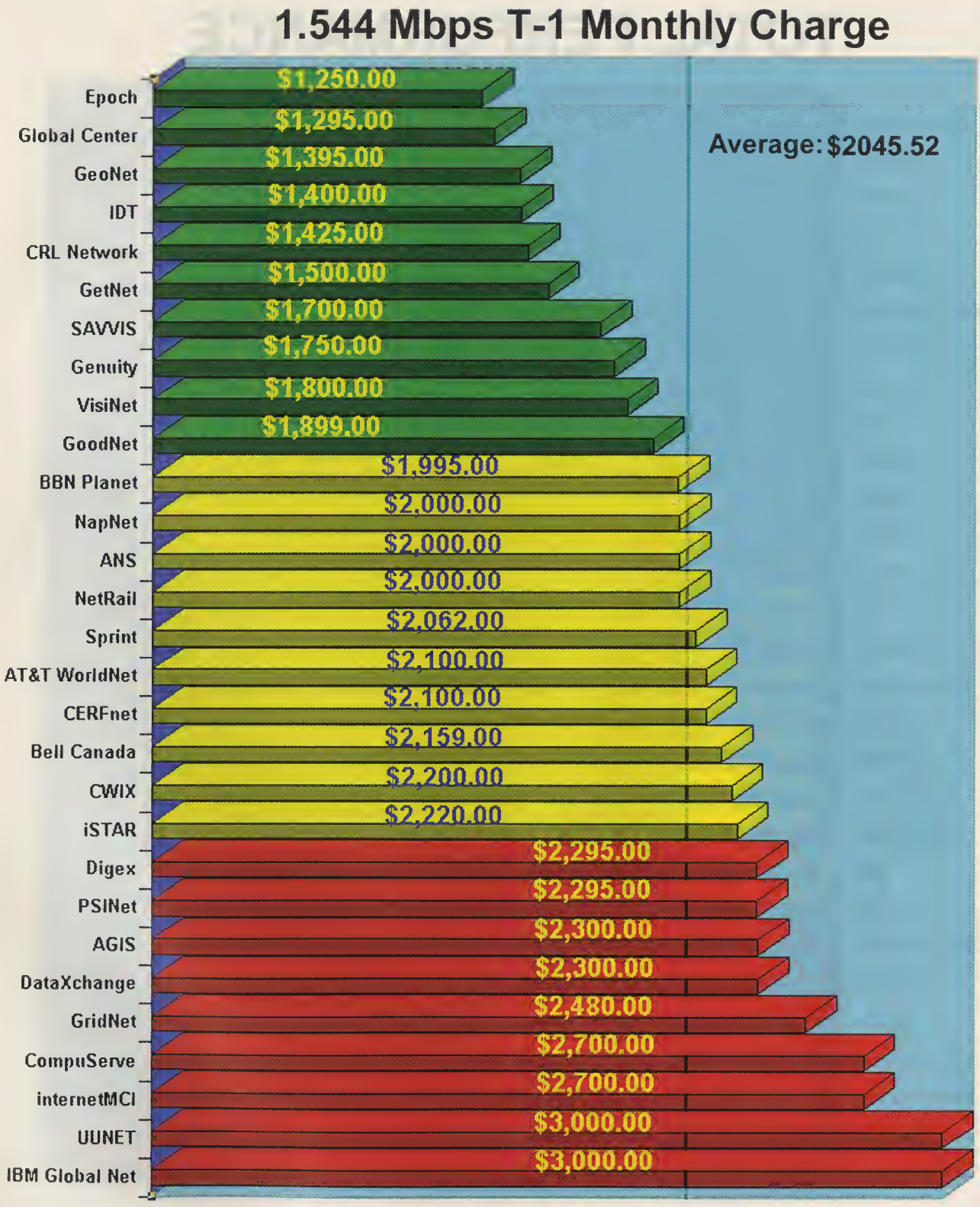
◆◆◆

AVERAGE DOWNLOAD TIME

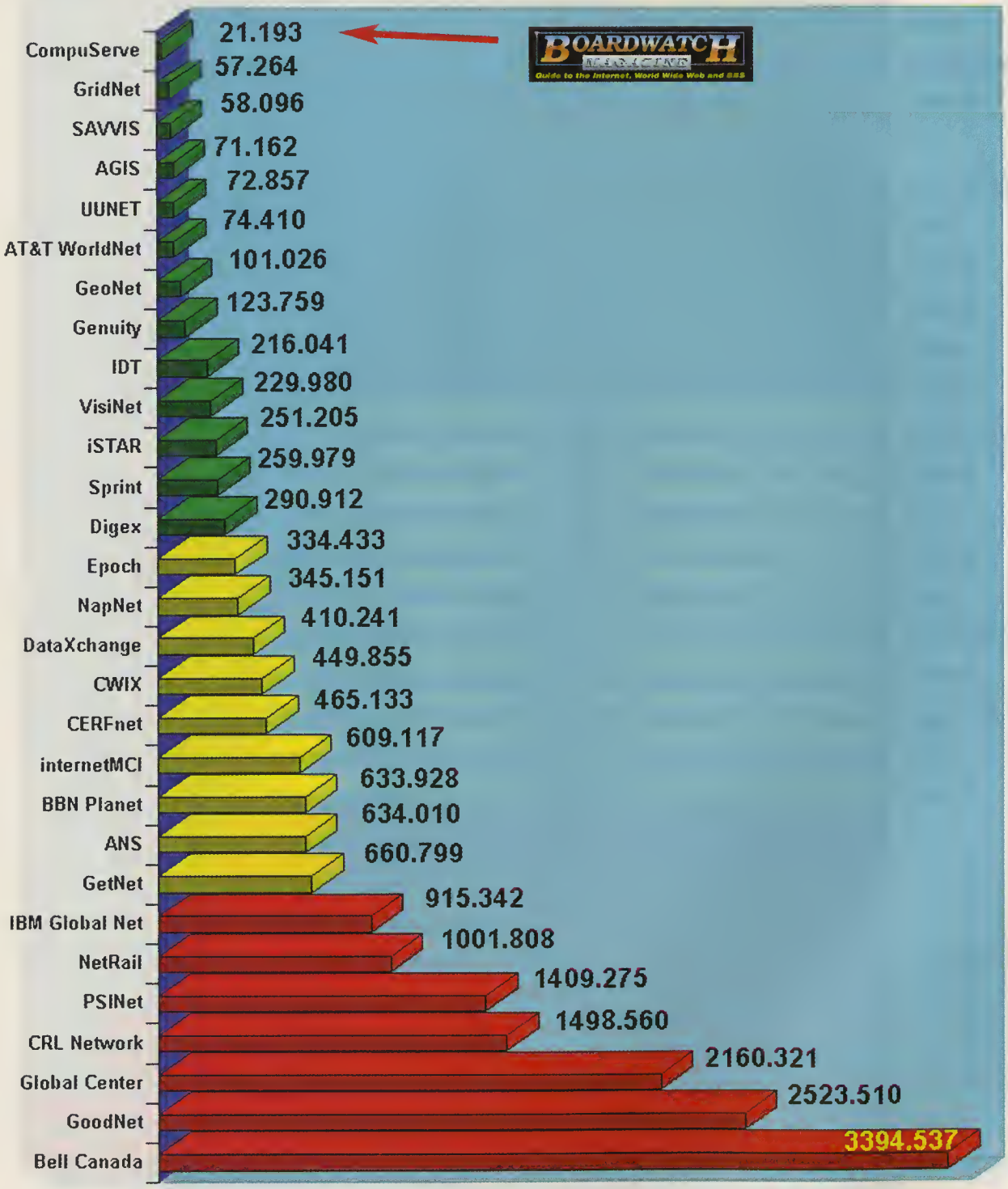


PERFORMANCE UNDER LOAD

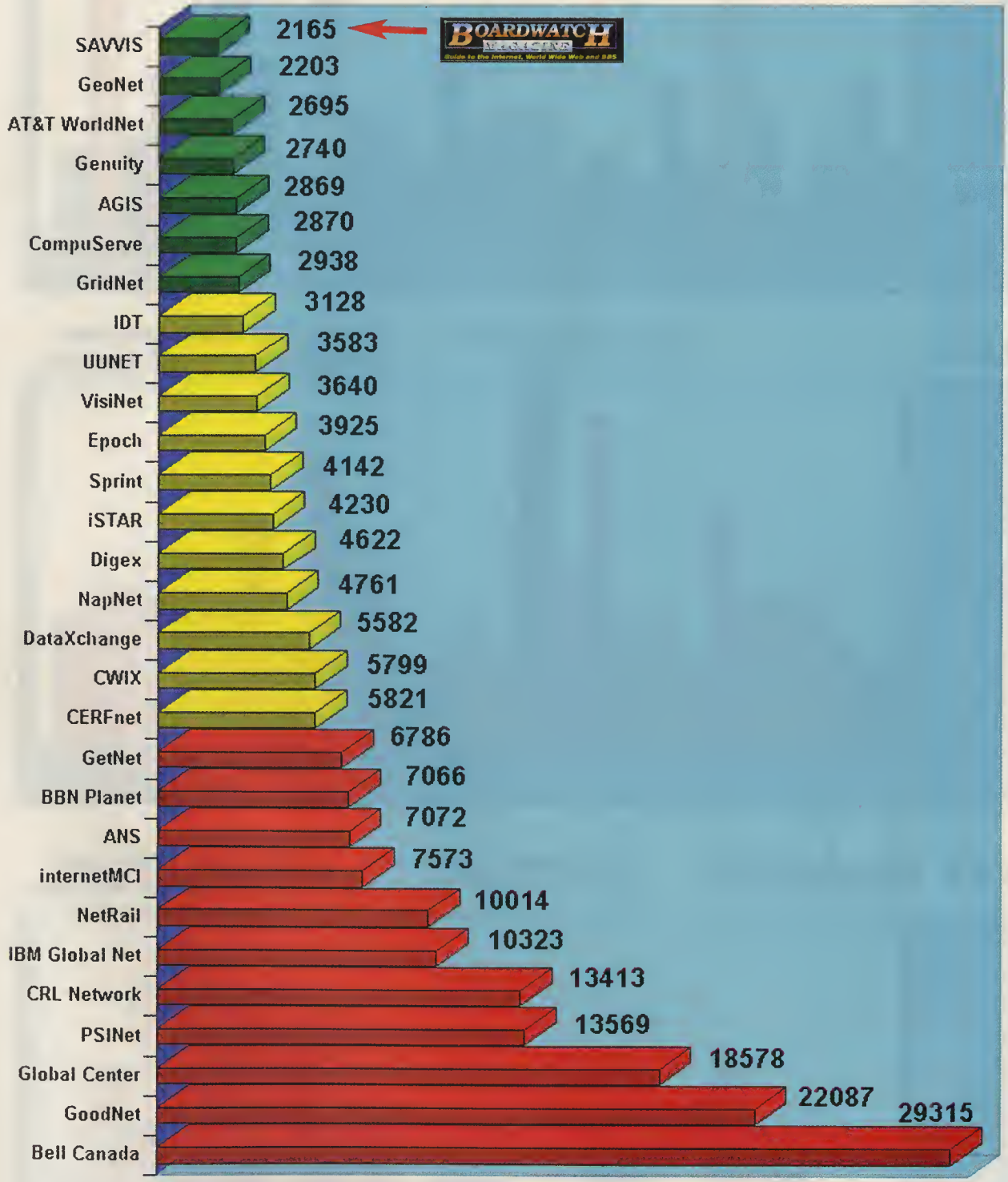



1.544 Mbps T-1 Monthly Charge
Average: $2045.52
Epoch $1,250.00
Global Center $1,295.00
GeoNet $1,395.00
IDT $1,400.00
CRL Network $1,425.00
GetNet $1,500.00
SAVVIS $1,700.00
Genuity $1,750.00
VisiNet $1,800.00
GoodNet $1,899.00
BBN Planet $1,995.00
NapNet $2,000.00
ANS $2,000.00
NetRail $2,000.00
Sprint $2,062.00
AT&T WorldNet $2,100.00
CERFnet $2,100.00
Bell Canada $2,159.00
CWIX $2,200.00
iSTAR $2,220.00
Digex $2,295.00
PSINet $2,295.00
AGIS $2,300.00
DataXchange $2,300.00
GridNet $2,480.00
CompuServe $2,700.00
internetMCI $2,700.00
UUNET $3,000.00
IBM Global Net $3,000.00

TOTAL PERFORMANCE



BEST VALUES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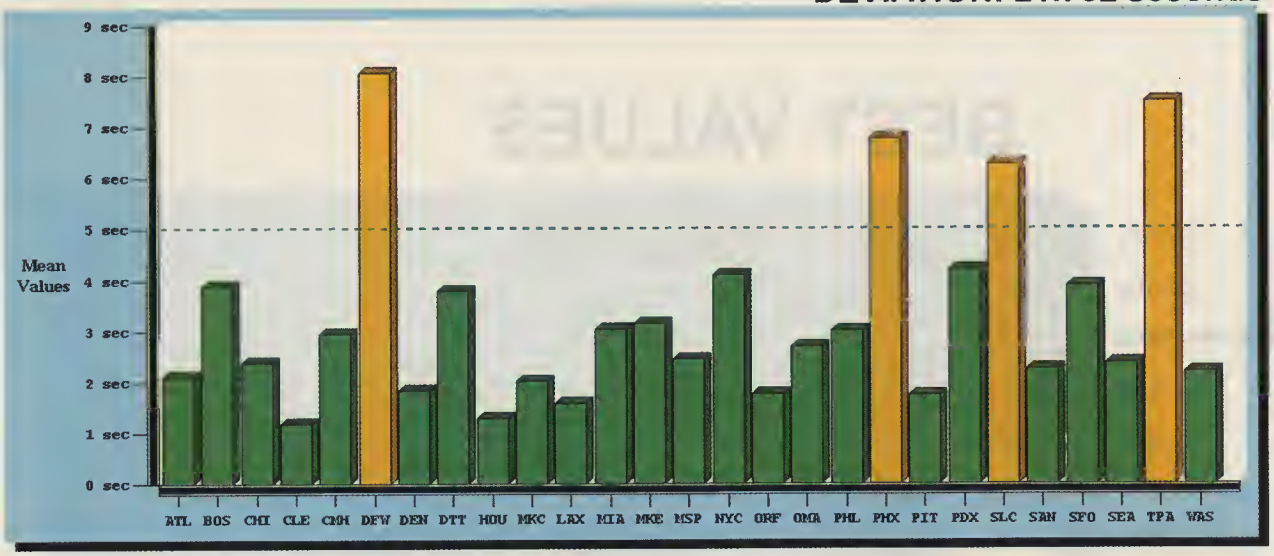
BBN Planet 7066
ANS 7072
internetMCI 7573
NetRail 10014
IBM Global Net 10323
CRL Network 13413
PSINet 13569
Global Center 18578
GoodNet 22087
Bell Canada 29315

AGIS

DATE: 04/20/97 thru 05/20/97
DATA POINTS: 59280

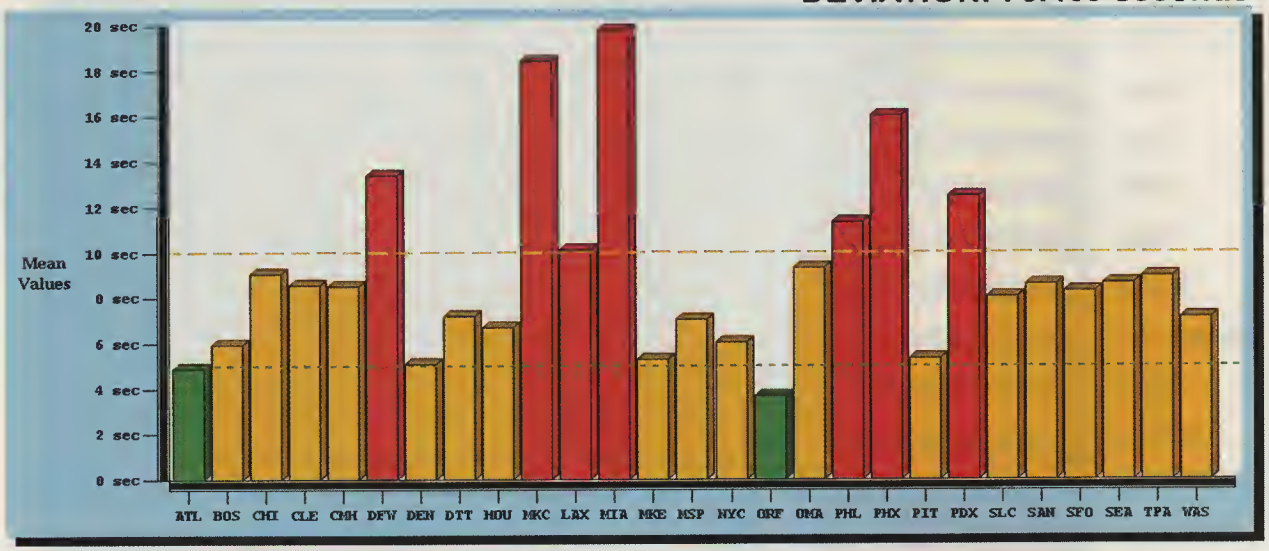
AVERAGE: 3.267 seconds
DEVIATION: 21.782 seconds



ANS

DATE: 04/20/97 thru 05/20/97
DATA POINTS: 57967

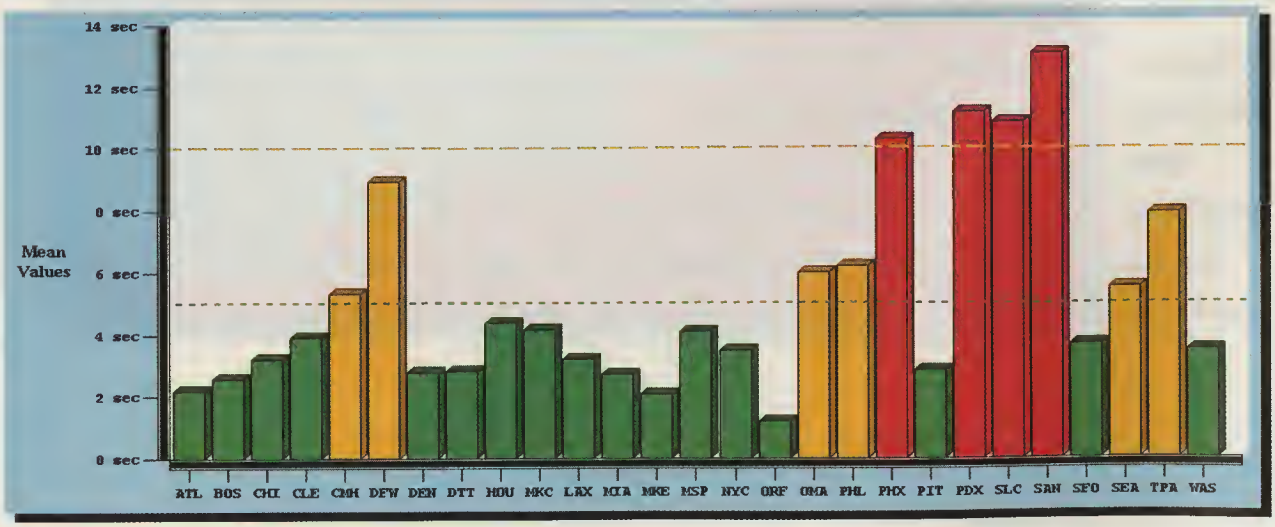
AVERAGE: 8.997 seconds
DEVIATION: 70.469 seconds

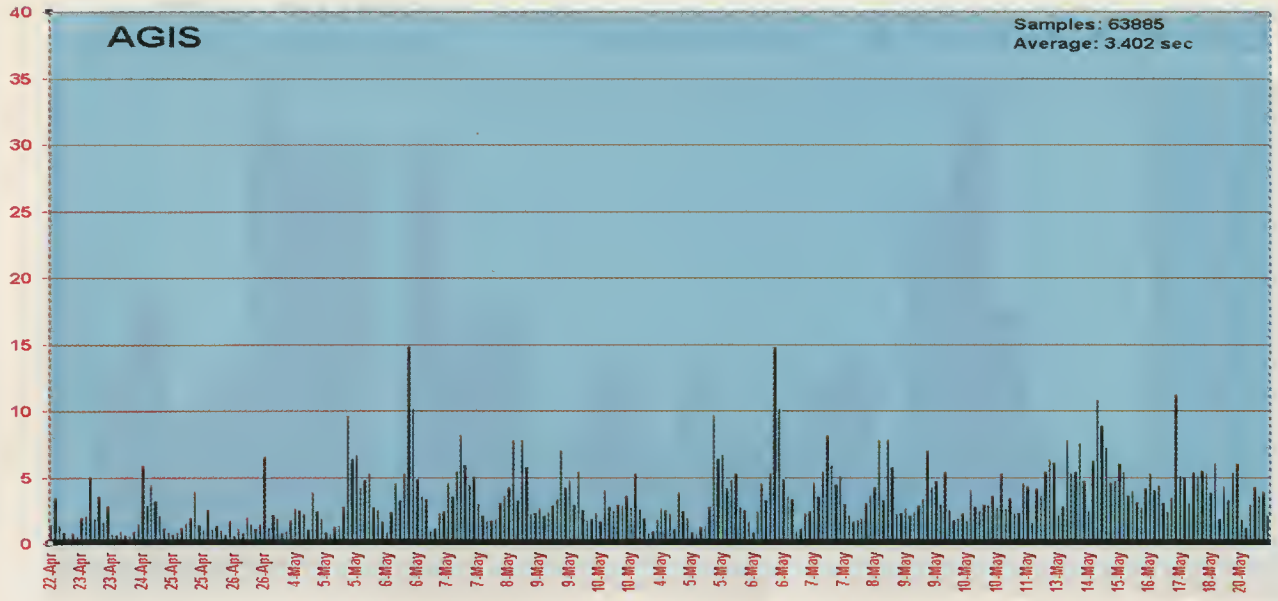


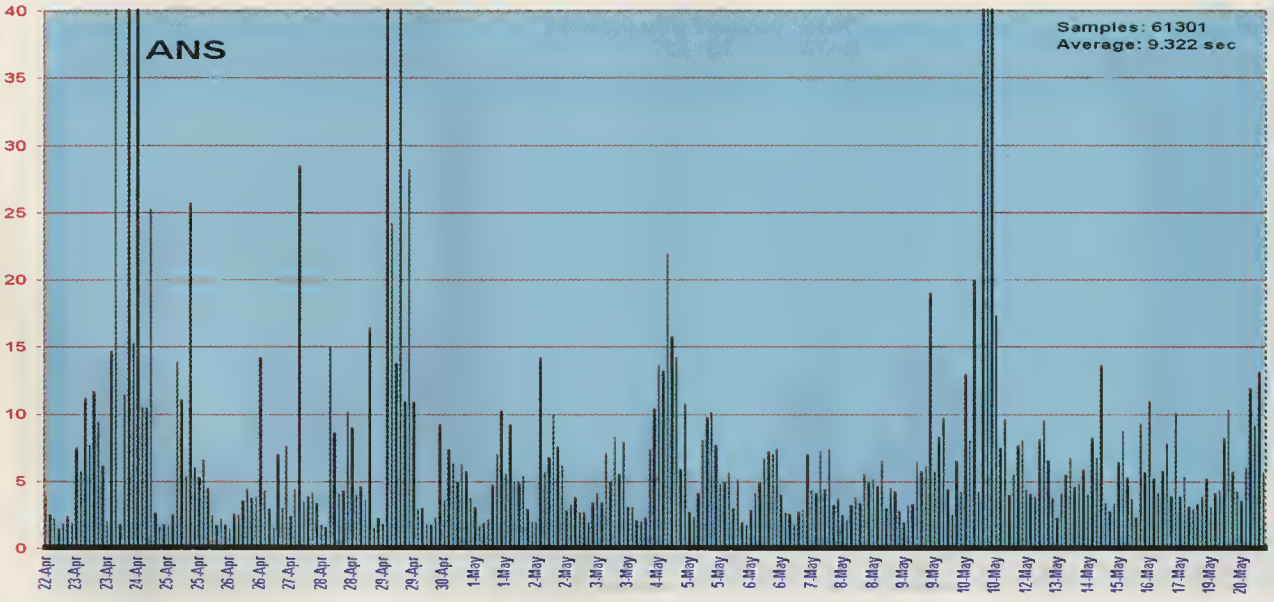
ATT WorldNet

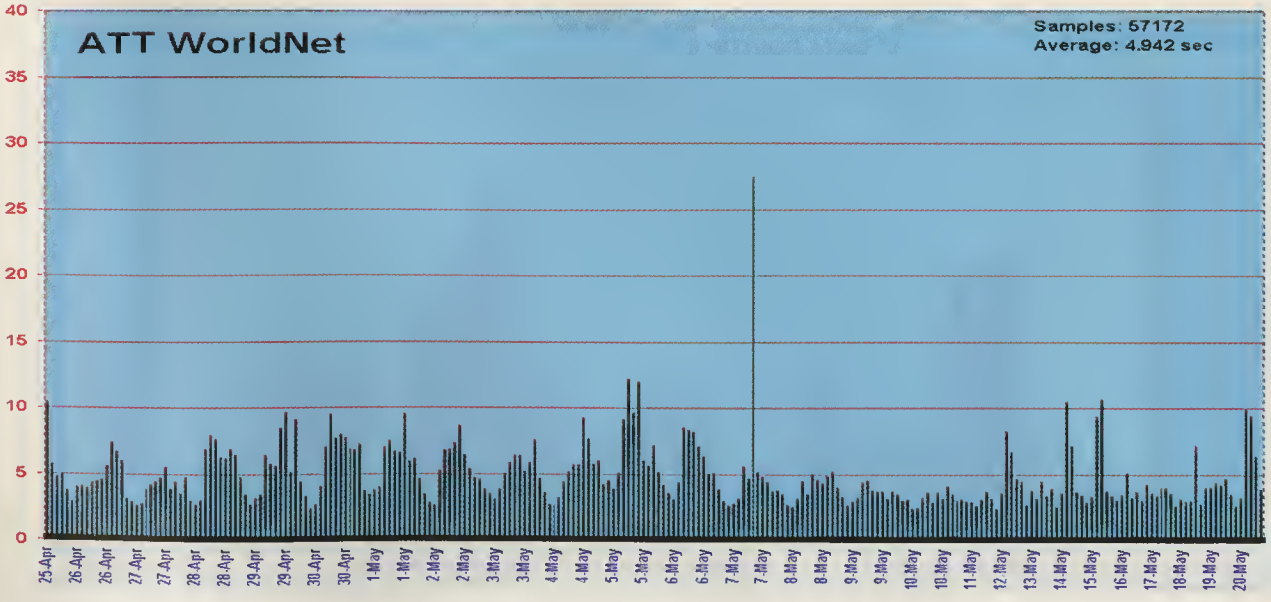
DATE: 04/20/97 thru 05/20/97
DATA POINTS: 65580

AVERAGE: 4.921 sec
DEVIATION: 15.121 sec




AGIS
Samples: 63885
Average: 3.402 sec

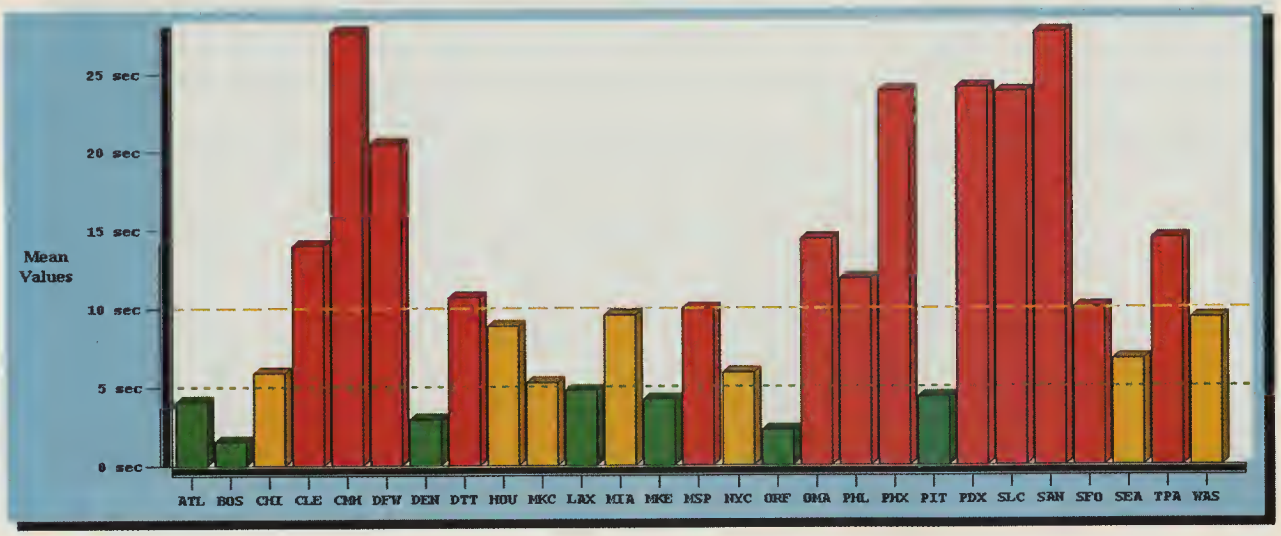

ANS
Samples: 61301
Average: 9.322 sec


ATT WorldNet
Samples: 57172
Average: 4.942 sec

BBN Planet/GTE

DATE: 04/20/97 thru 05/20/97
DATA POINTS: 59183

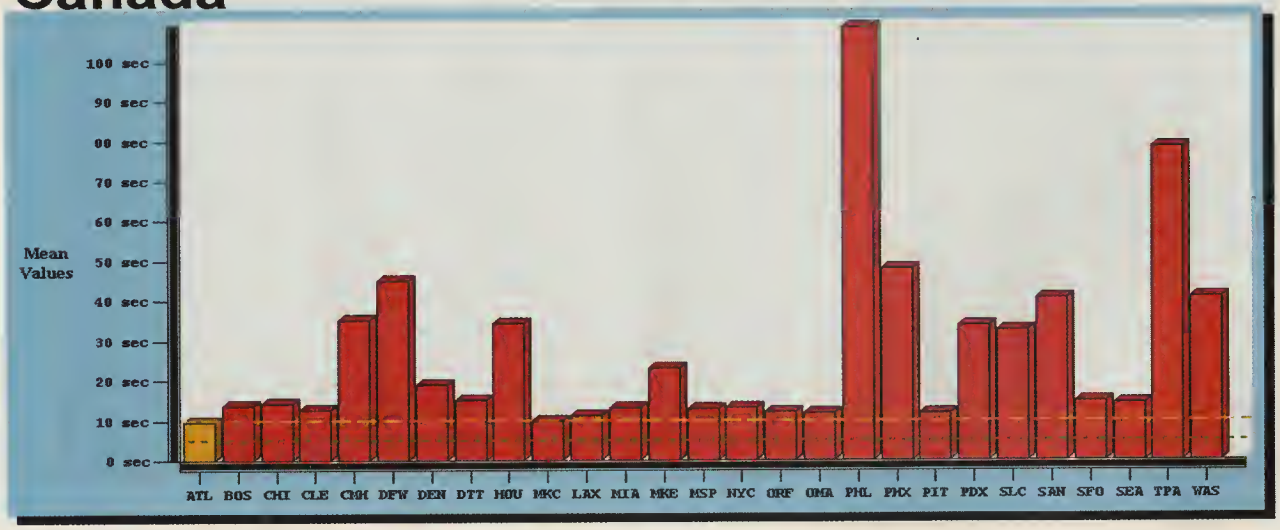
AVERAGE: 10.870 sec
DEVIATION: 58.319 sec



Bell Canada

DATE: 04/20/97 thru 05/20/97
DATA POINTS: 52748

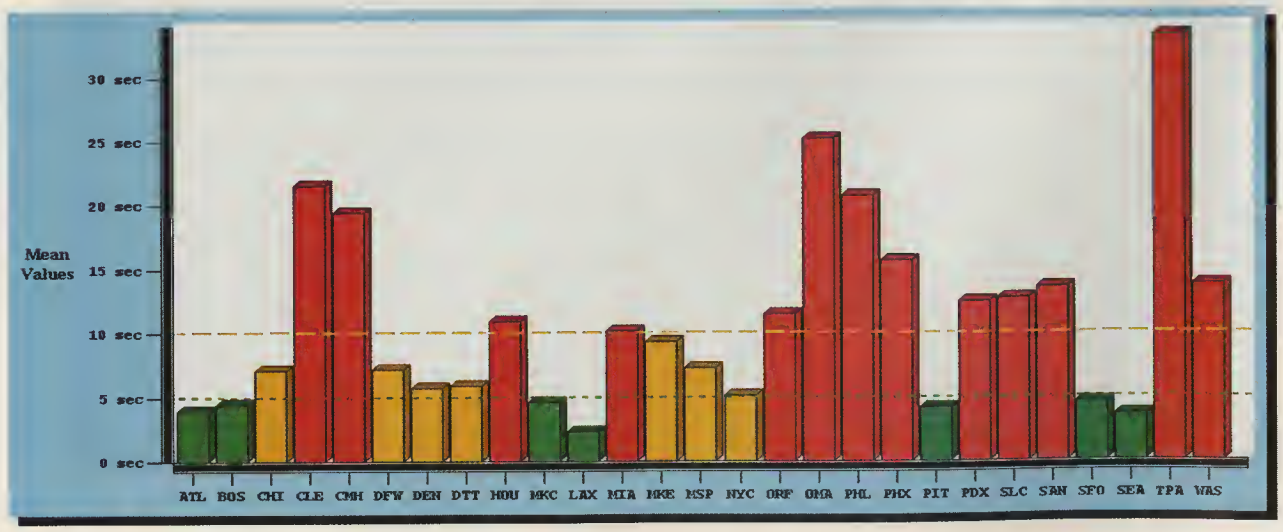
AVERAGE: 26.767 sec
DEVIATION: 126.818 sec

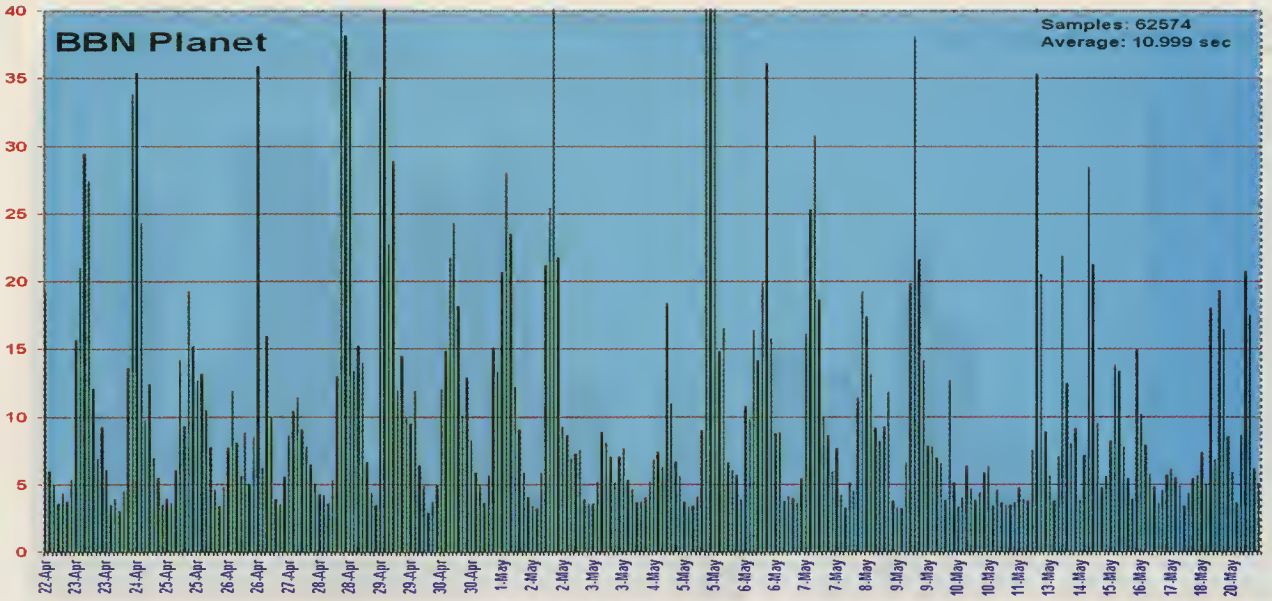


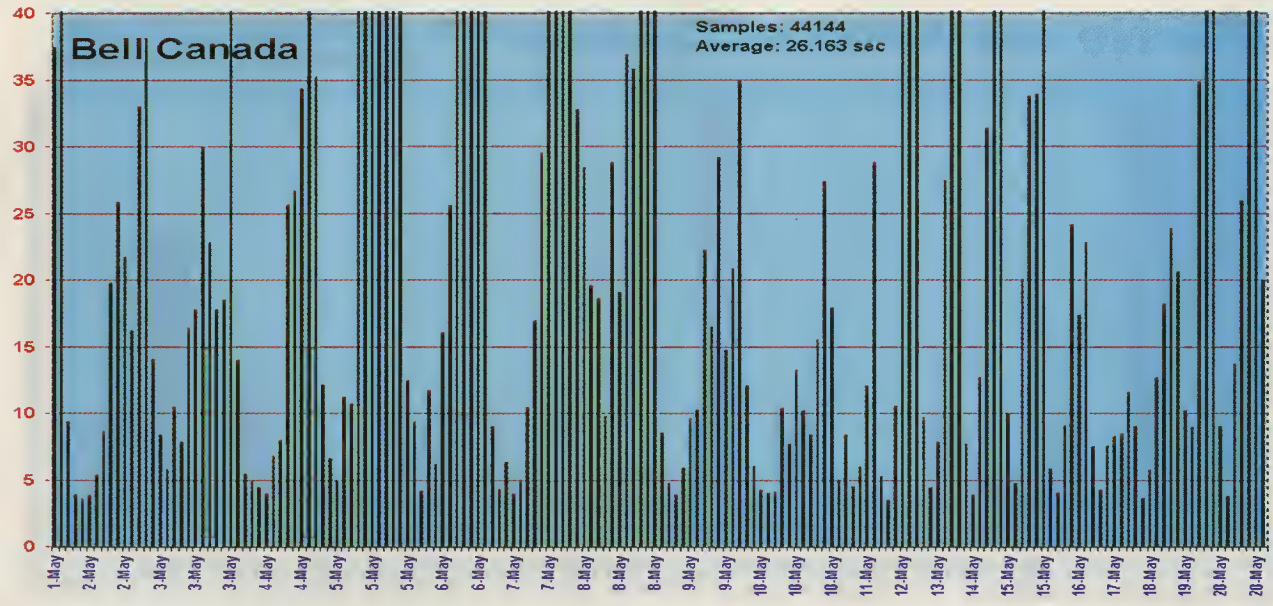
CERFnet

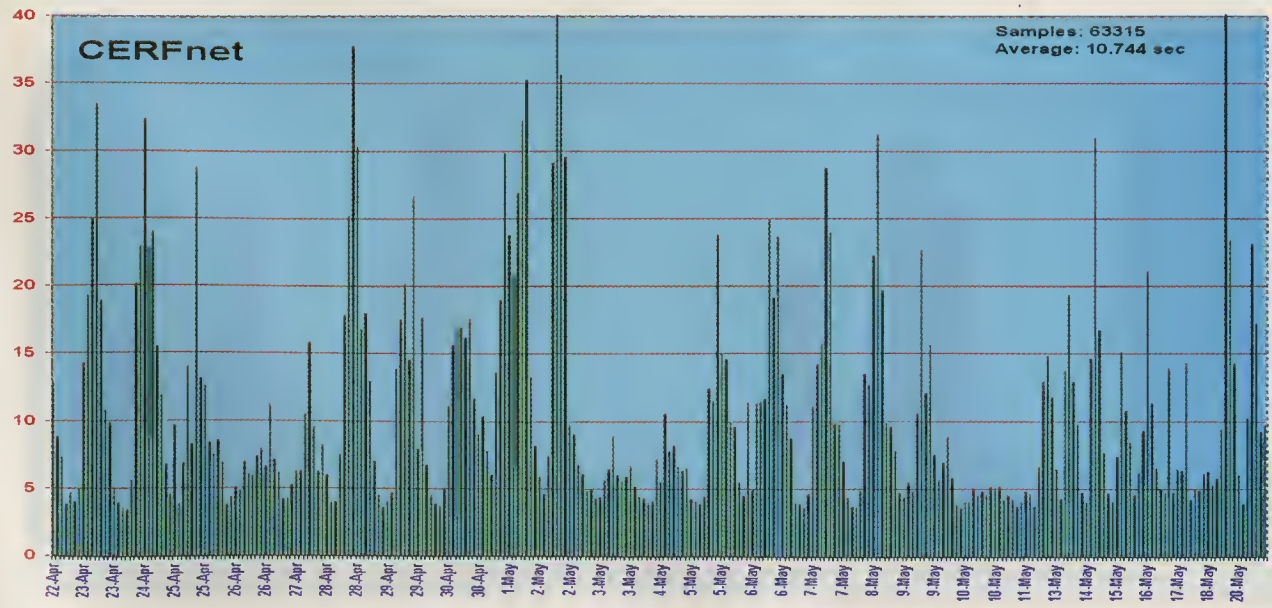
DATE: 04/20/97 thru 05/20/97
DATA POINTS: 59838

AVERAGE: 10.521 sec
DEVIATION: 44.210 sec




BBN Planet
Samples: 62574
Average: 10.999 sec

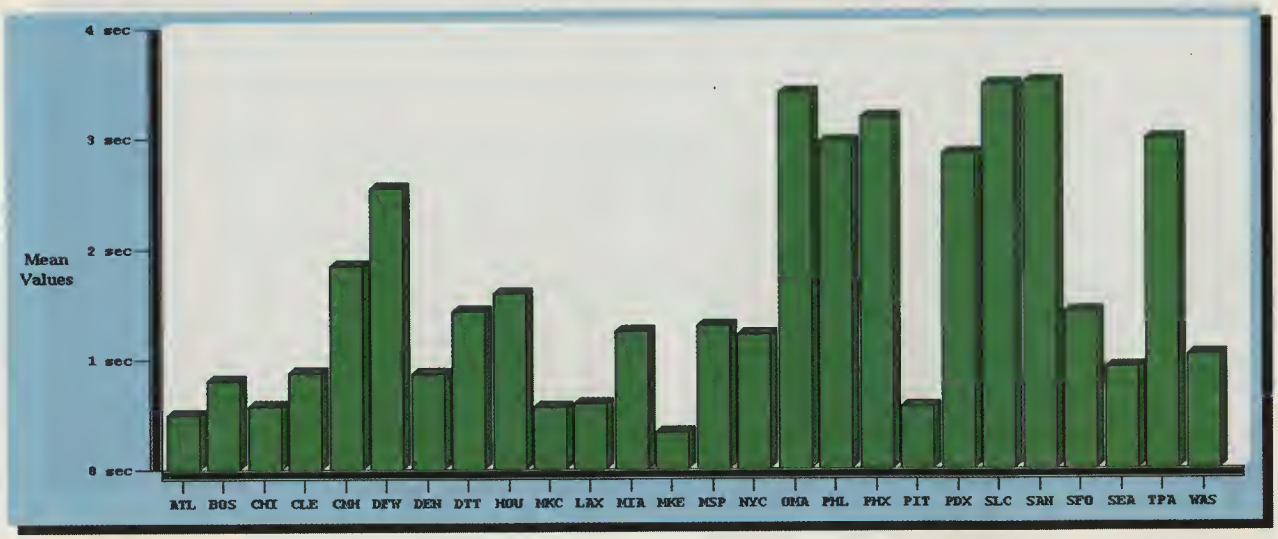

Bell Canada
Samples: 44144
Average: 26.163 sec


CERFnet
Samples: 63315
Average: 10.744 sec

CompuServe

DATE: 04/20/97 thru 05/20/97
DATA POINTS: 58324

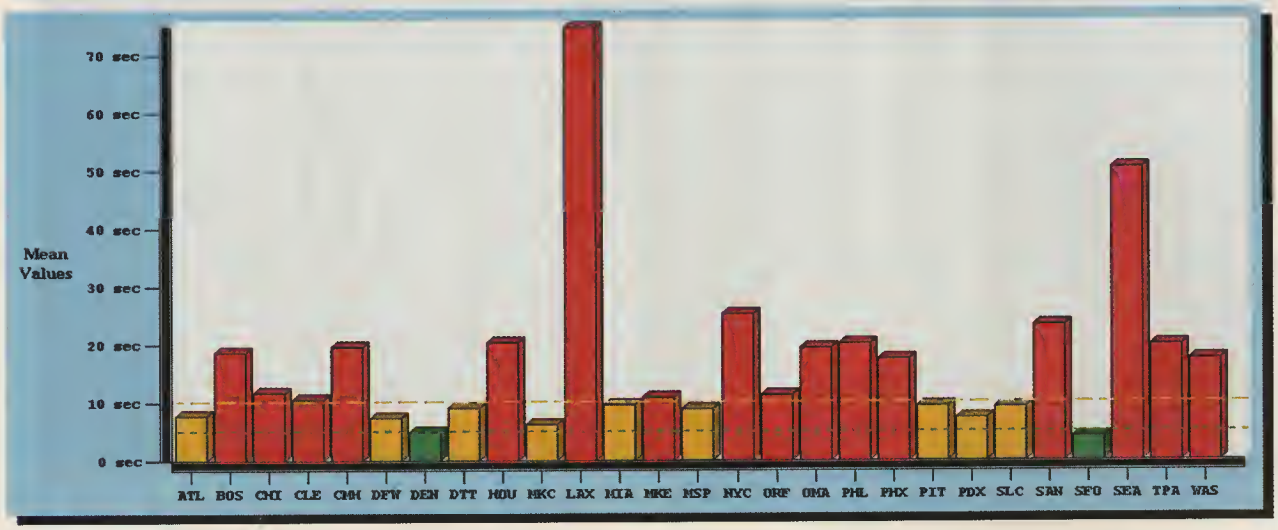
AVERAGE: 1.543 sec
DEVIATION: 13.735 sec



CRL Network Svcs

DATE: 04/20/97 thru 05/20/97
DATA POINTS: 59532

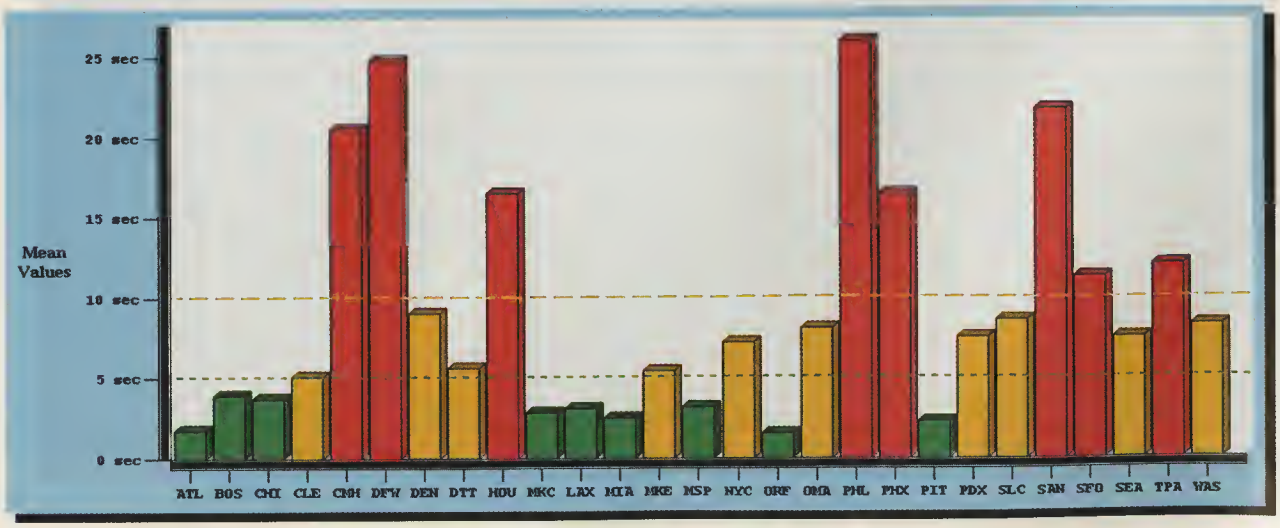
AVERAGE: 17.654 sec
DEVIATION: 84.885 sec

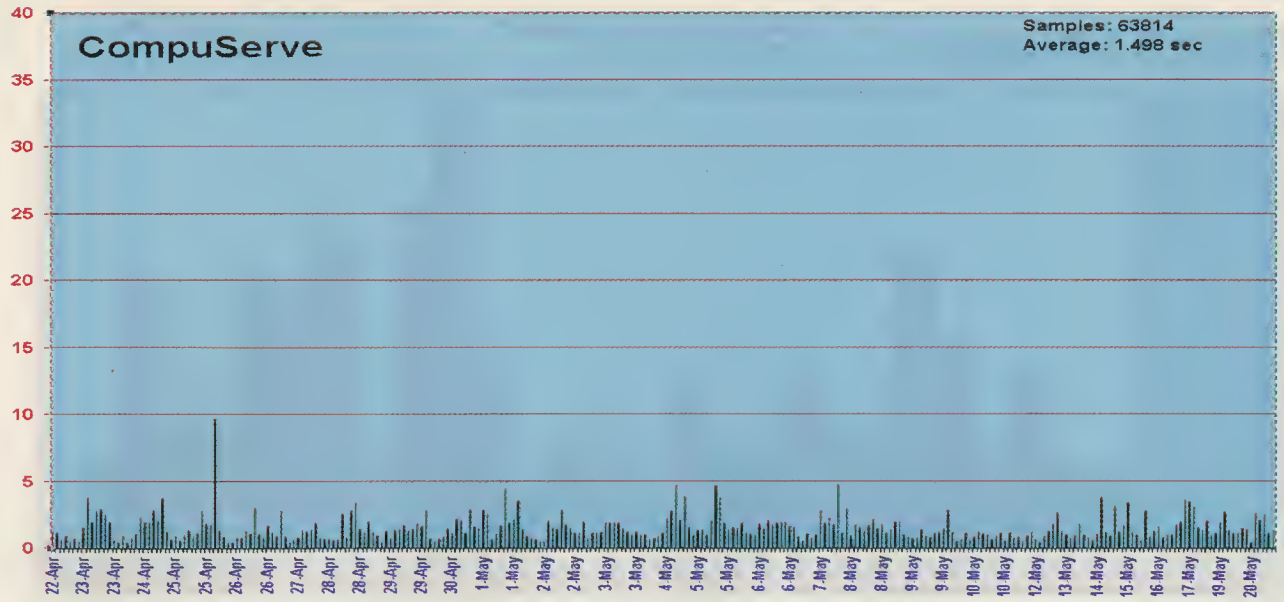


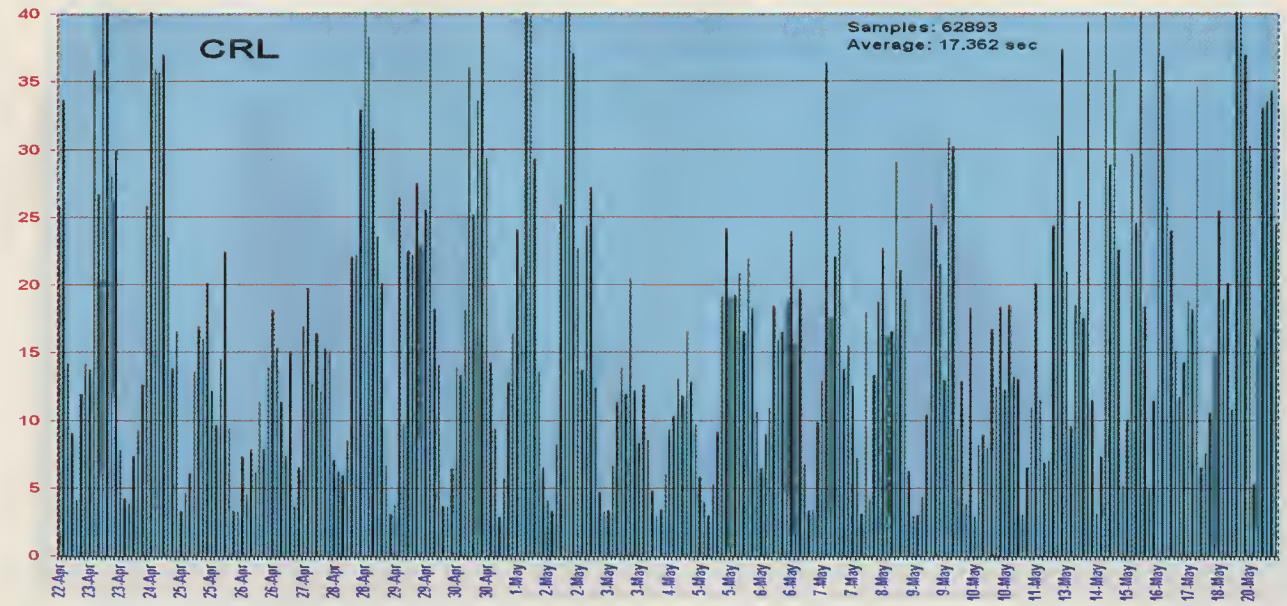
CWIX

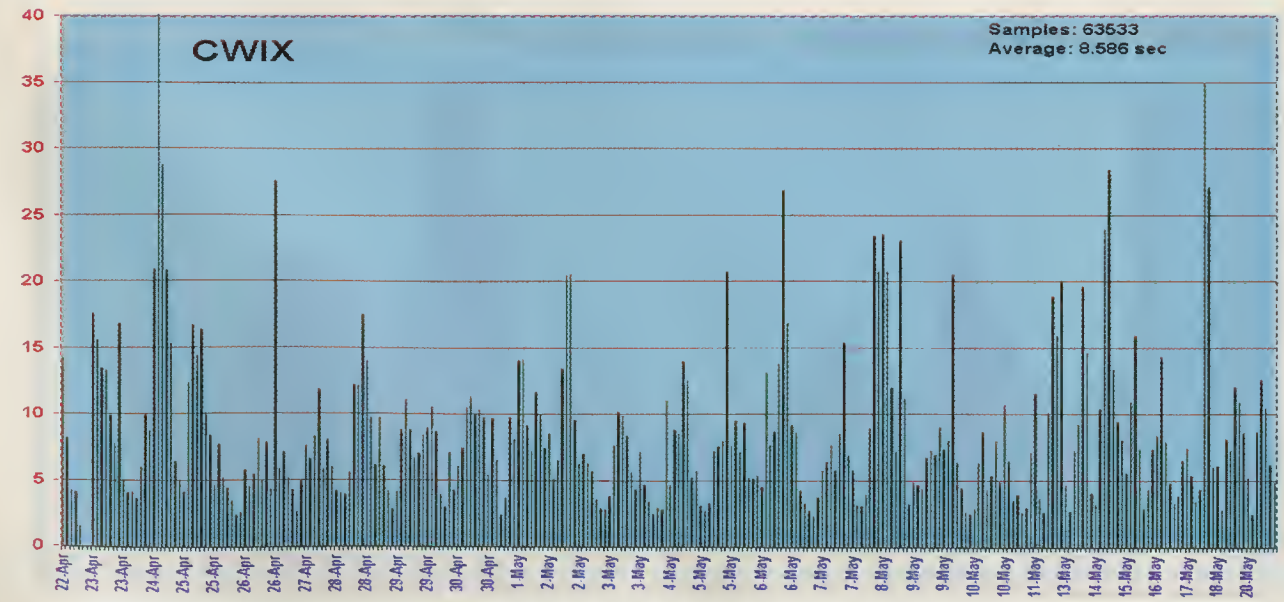
DATE: 04/20/97 thru 05/20/97
DATA POINTS: 60020

AVERAGE: 8.879 sec
DEVIATION: 50.665 sec




CompuServe
Samples: 63814
Average: 1.498 sec

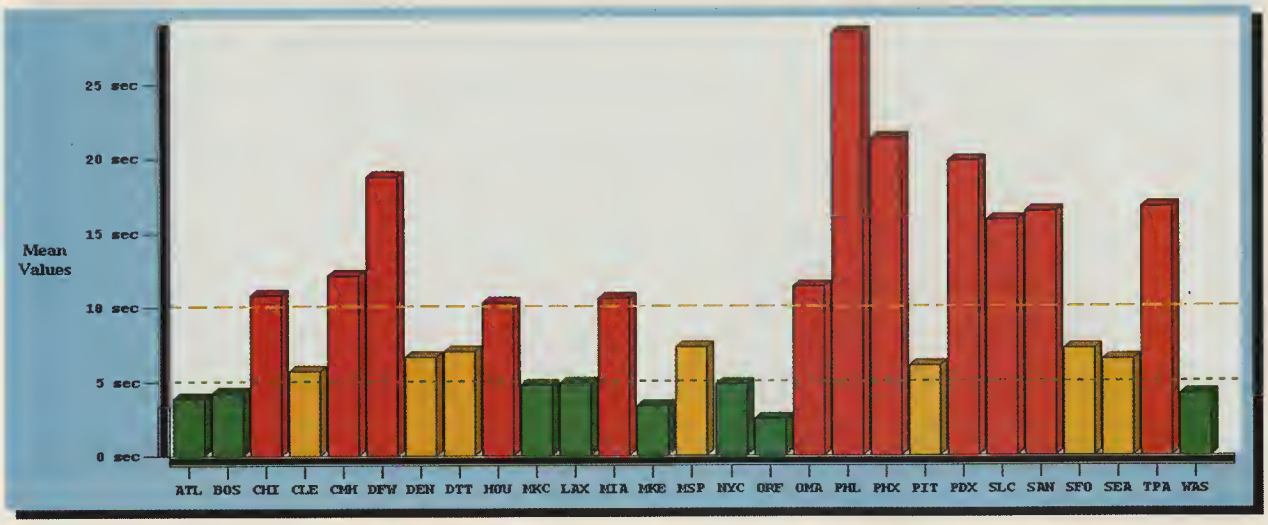

CRL
Samples: 62893
Average: 17.362 sec


CWIX
Samples: 63533
Average: 8.586 sec

DataXchange

DATE: 04/20/97 thru 05/20/97
DATA POINTS: 60411

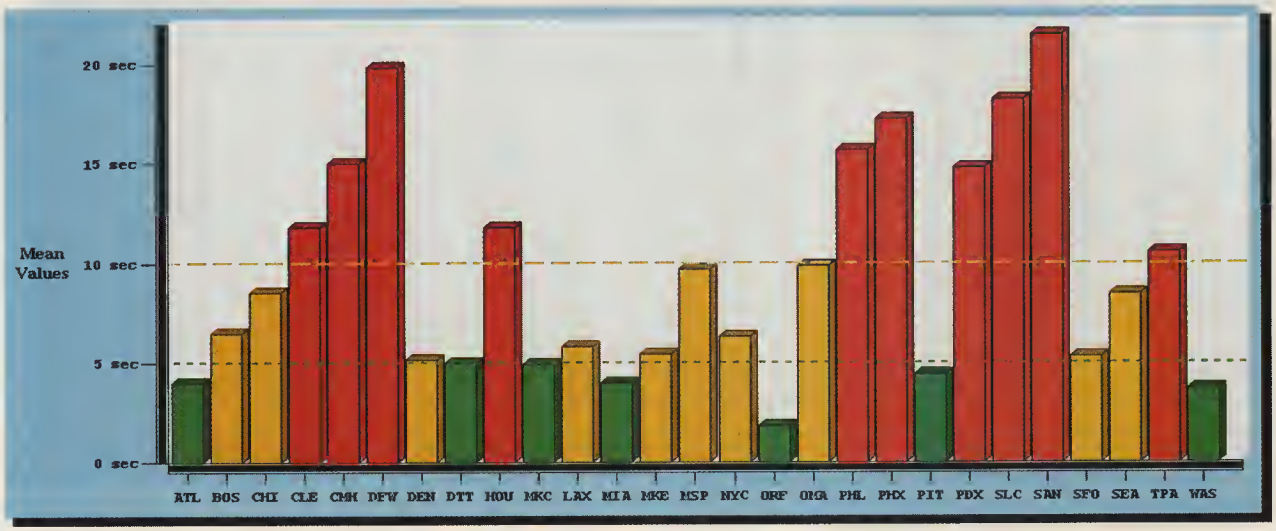
AVERAGE: 9.974 sec
DEVIATION: 41.131 sec



DIGEX

DATE: 04/20/97 thru 05/20/97
DATA POINTS: 60213

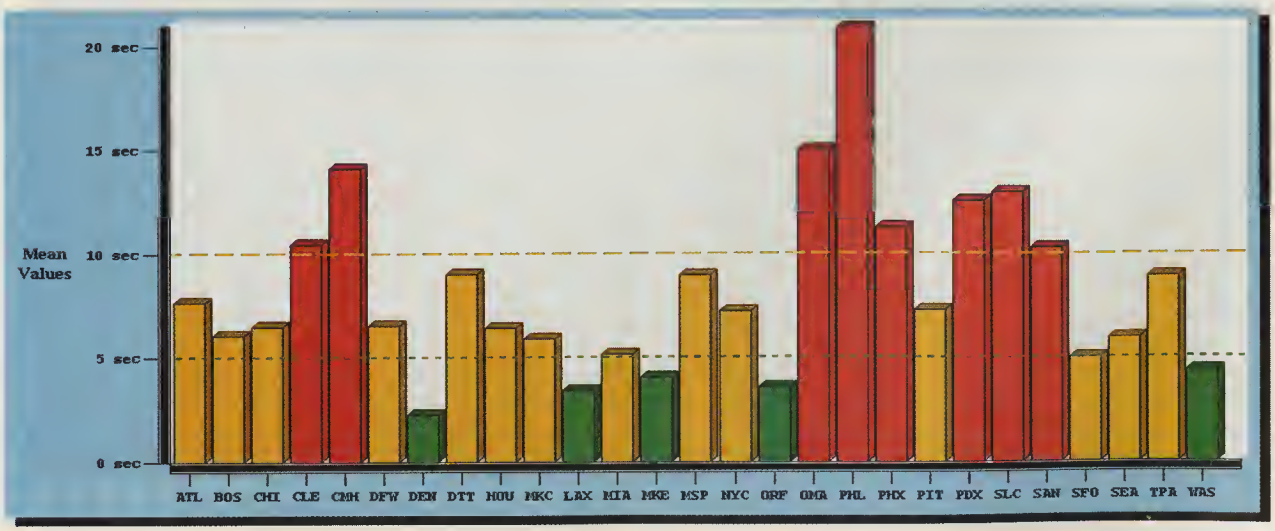
AVERAGE: 9.162 sec
DEVIATION: 31.752 sec

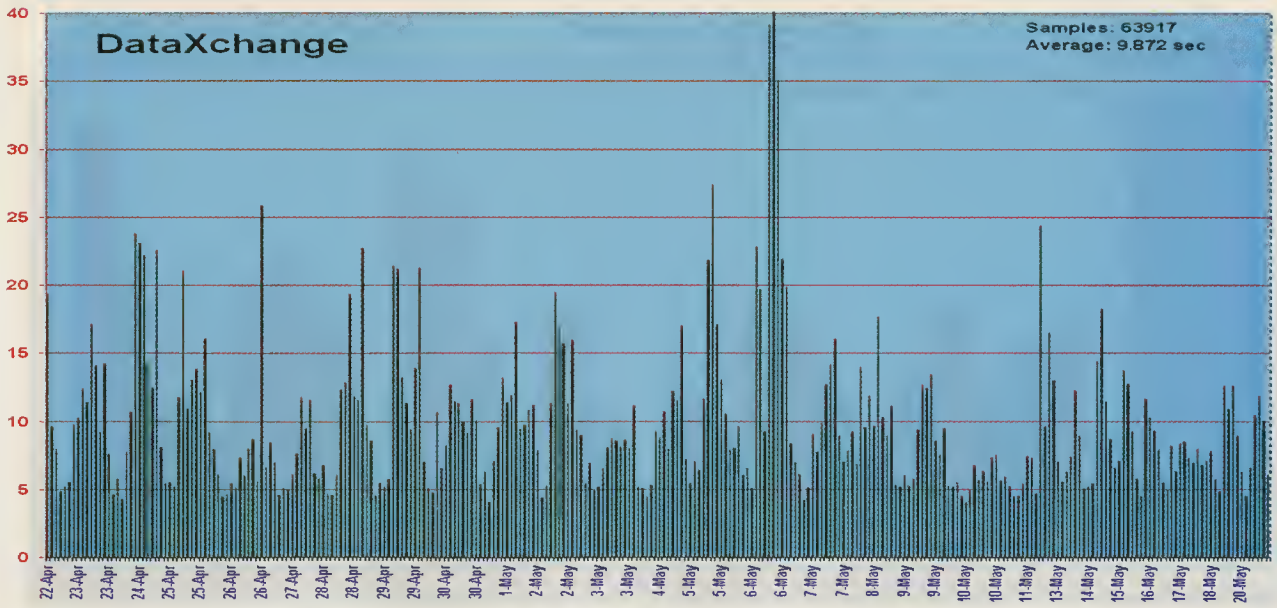


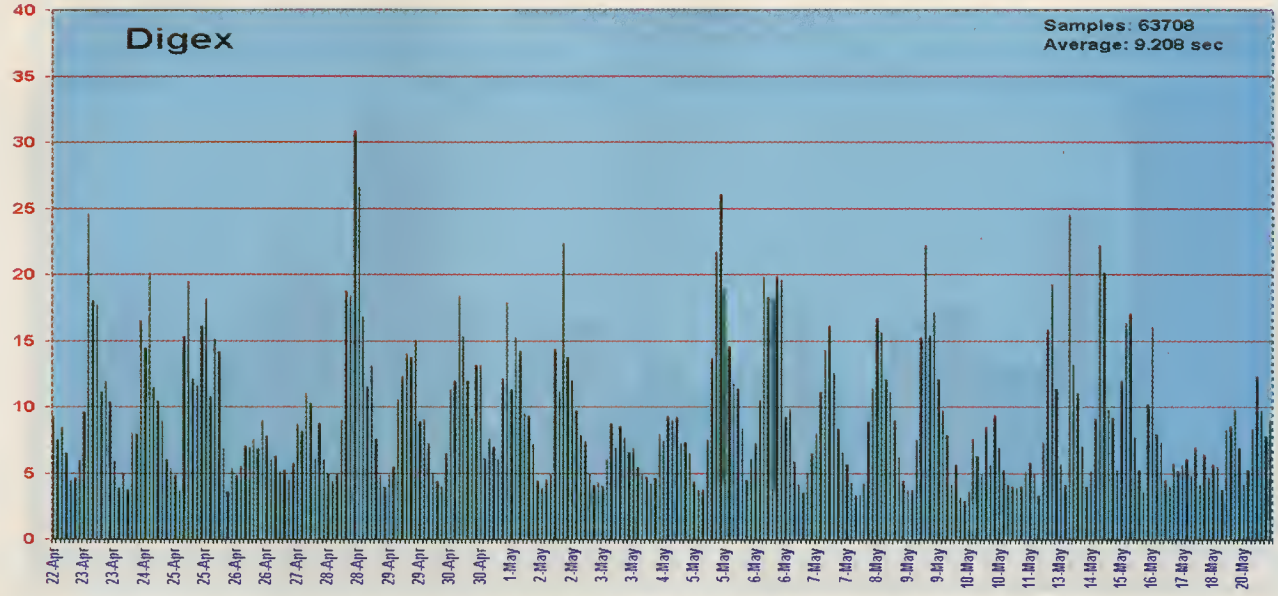
EPOCH Networks

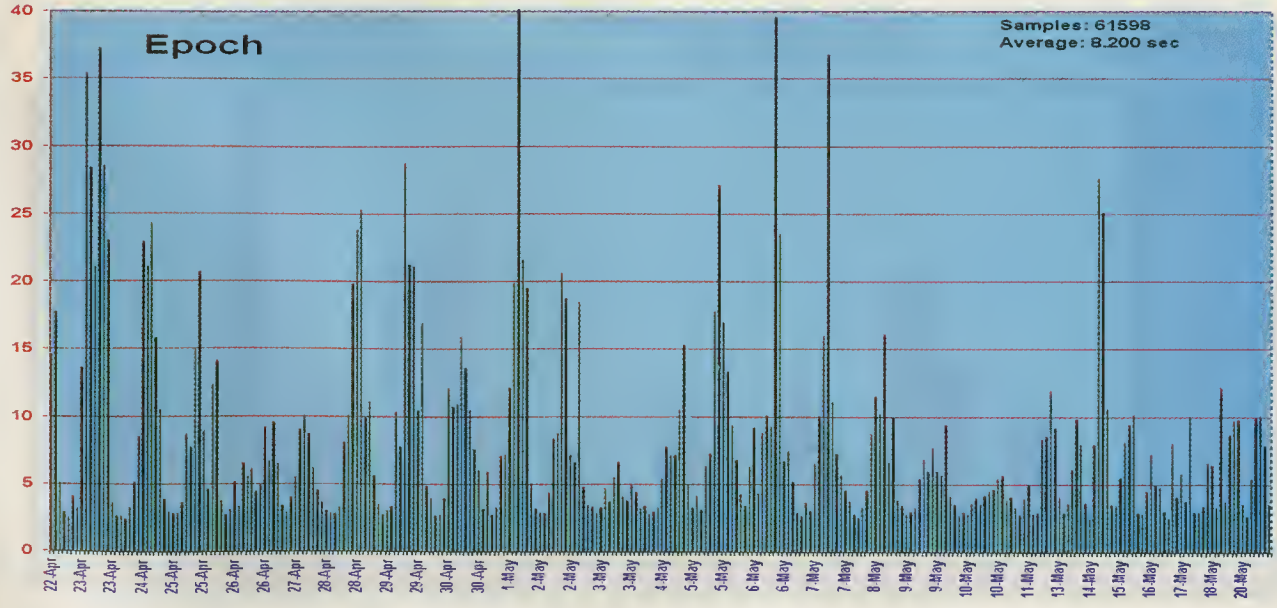
DATE: 04/20/97 thru 05/20/97
DATA POINTS: 58217

AVERAGE: 7.972
DEVIATION: 41.951




DataXchange
Samples: 63917
Average: 9.872 sec

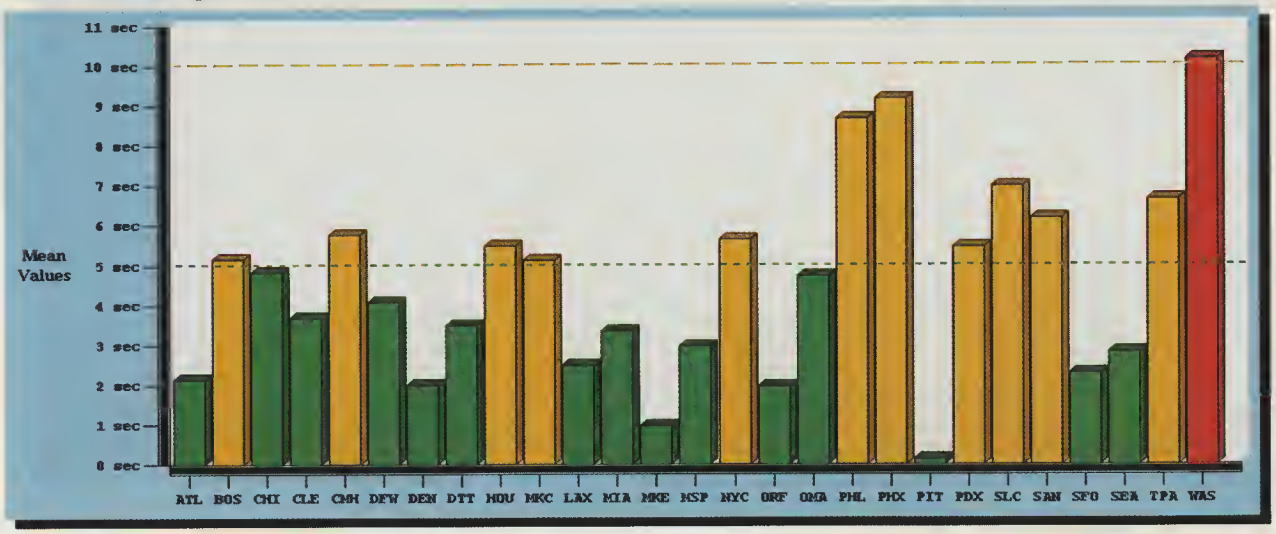

Digex
Samples: 63708
Average: 9.208 sec


Epoch
Samples: 61598
Average: 8.200 sec

Genuity

DATE: 04/20/97 thru 05/20/97
DATA POINTS: 63610

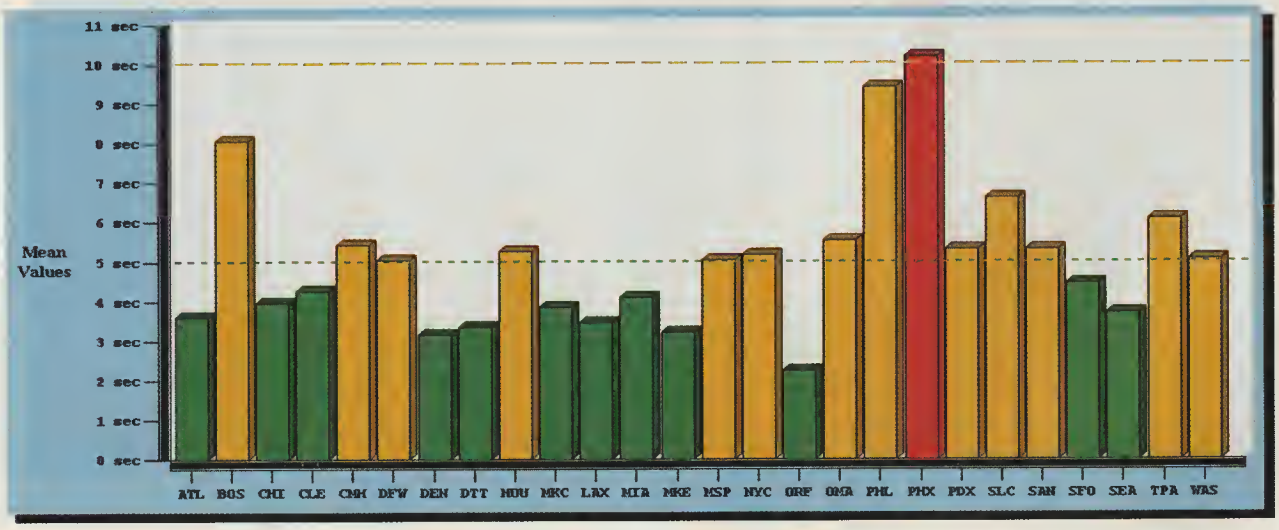
AVERAGE: 4.851 sec
DEVIATION: 25.512 sec



GeoNet

DATE: 04/20/97 thru 05/20/97
DATA POINTS: 36856

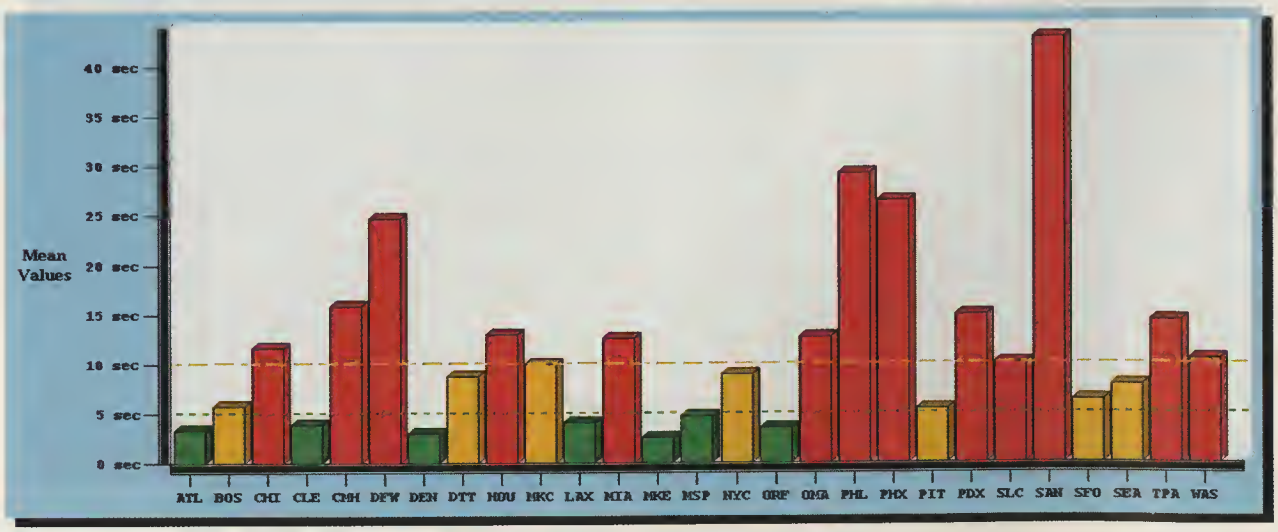
AVERAGE: 5.108 sec
DEVIATION: 19.778 sec

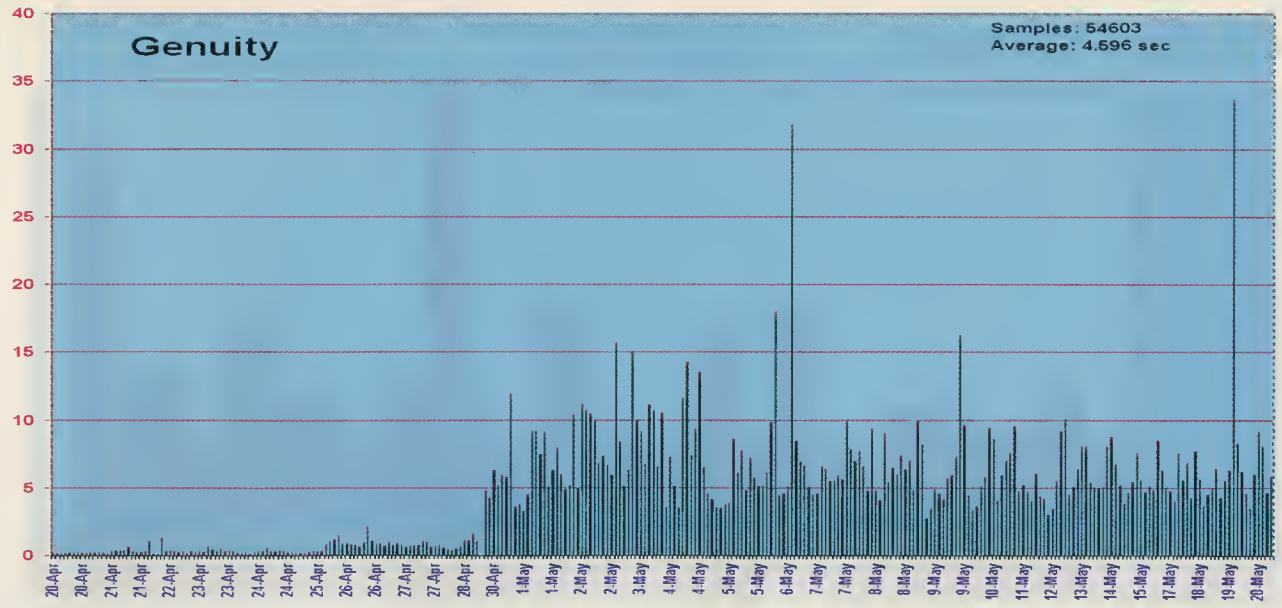


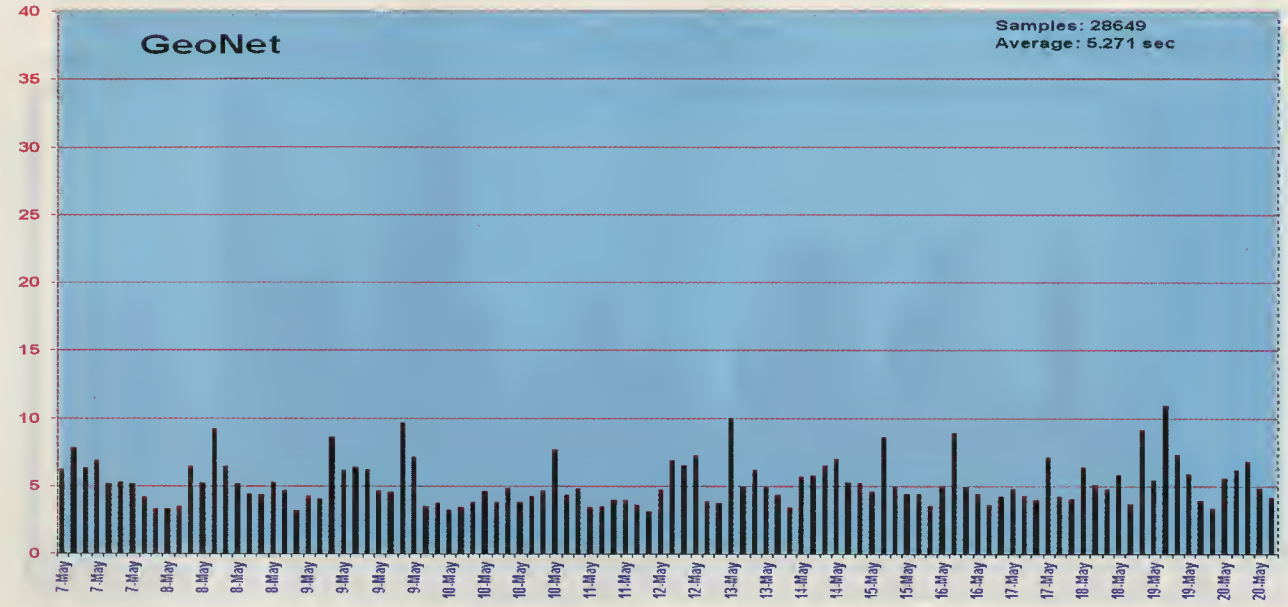
GetNet

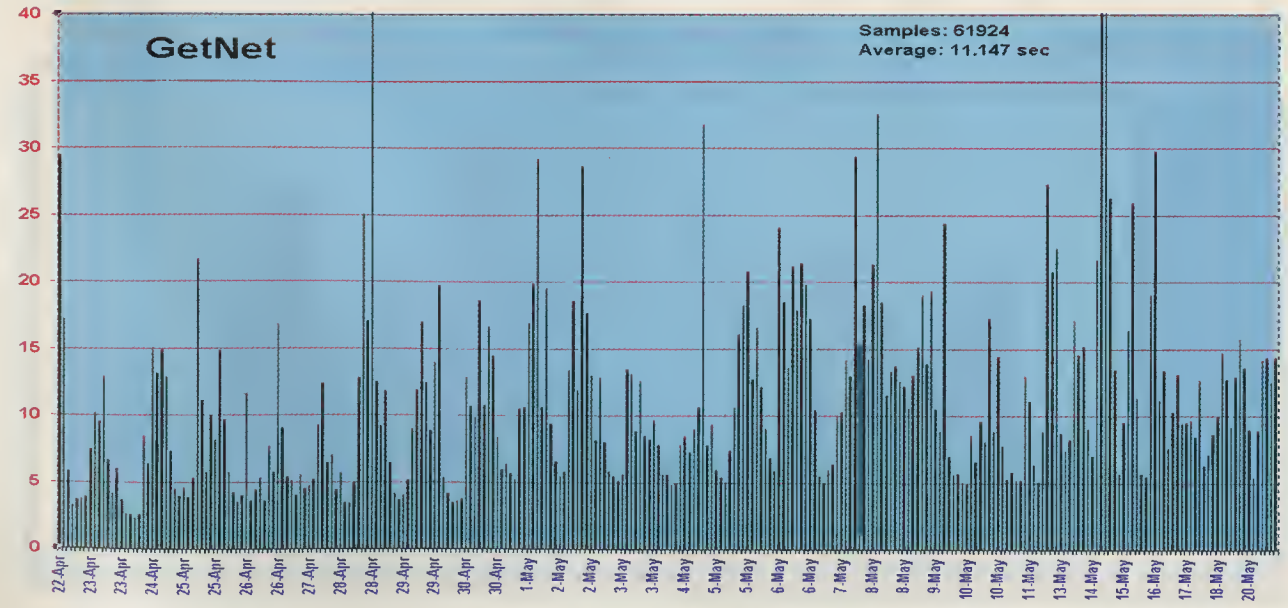
DATE: 04/20/97 thru 05/20/97
DATA POINTS: 70404

AVERAGE: 11.323 sec
DEVIATION: 58.359 sec




Genuity
Samples: 54603
Average: 4.596 sec

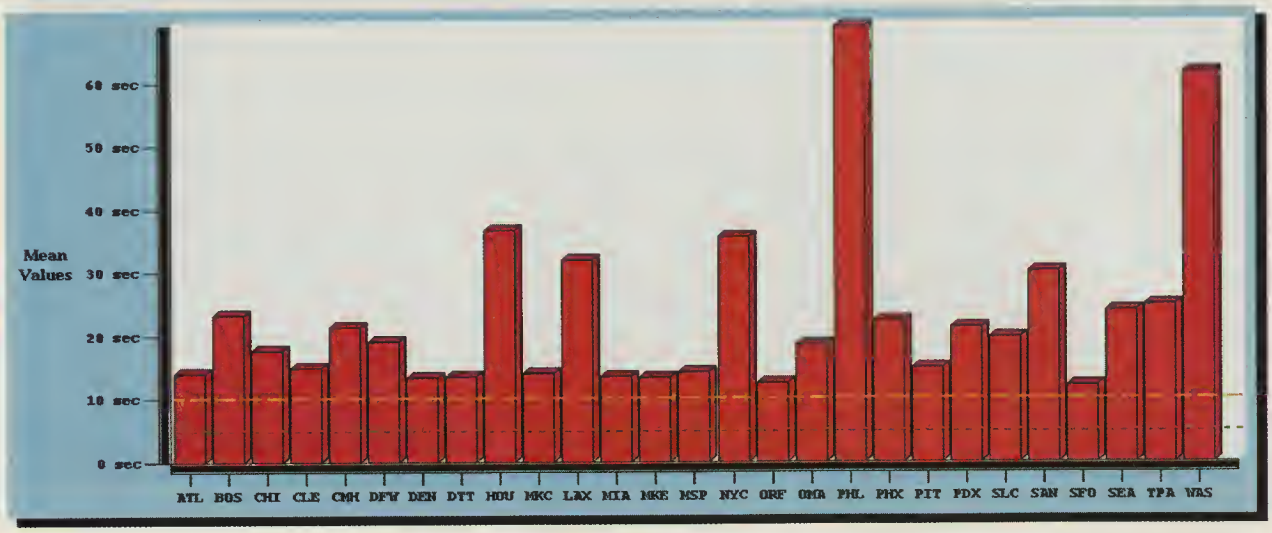

GeoNet
Samples: 28649
Average: 5.271 sec


GetNet
Samples: 61924
Average: 11.147 sec

Global Center

DATE: 04/20/97 thru 05/20/97
DATA POINTS: 60114

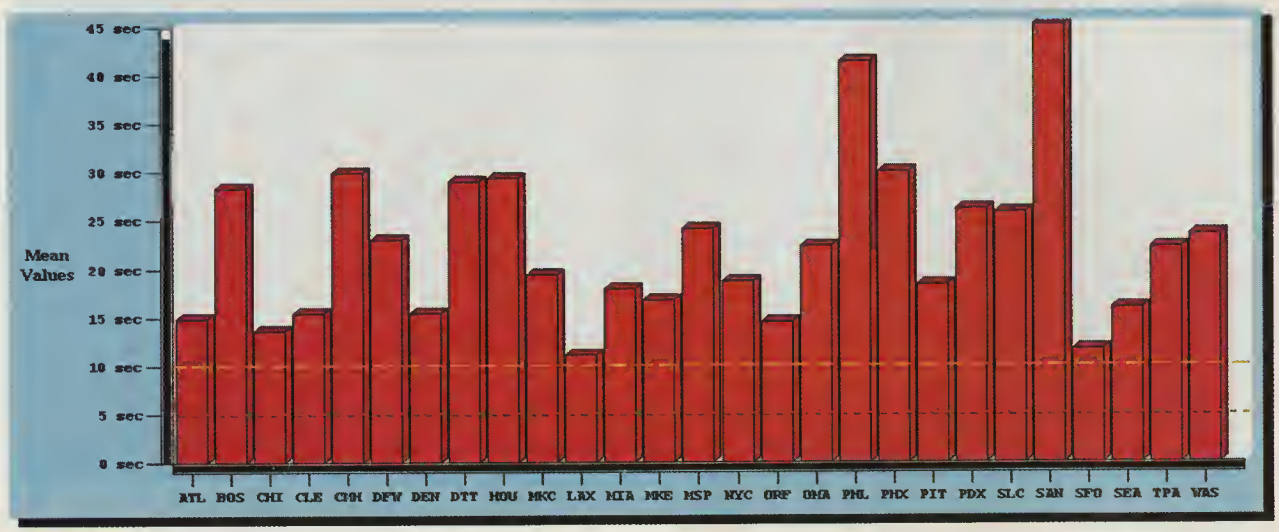
AVERAGE: 23.505 sec
DEVIATION: 91.909 sec



GoodNet

DATE: 04/20/97 thru 05/20/97
DATA POINTS: 70658

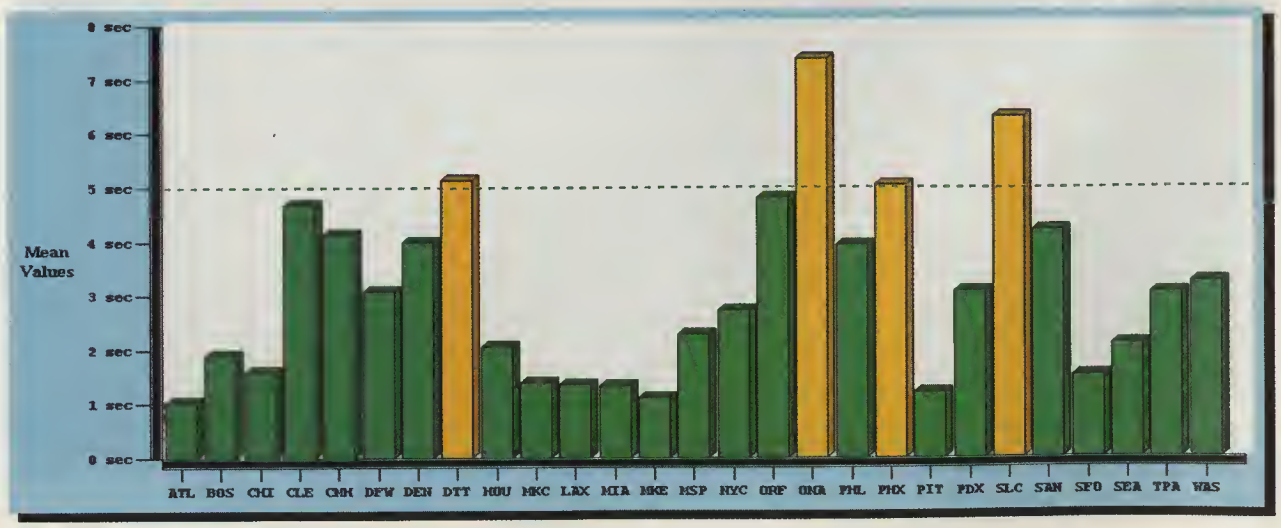
AVERAGE: 22.000 sec
DEVIATION: 114.705 sec

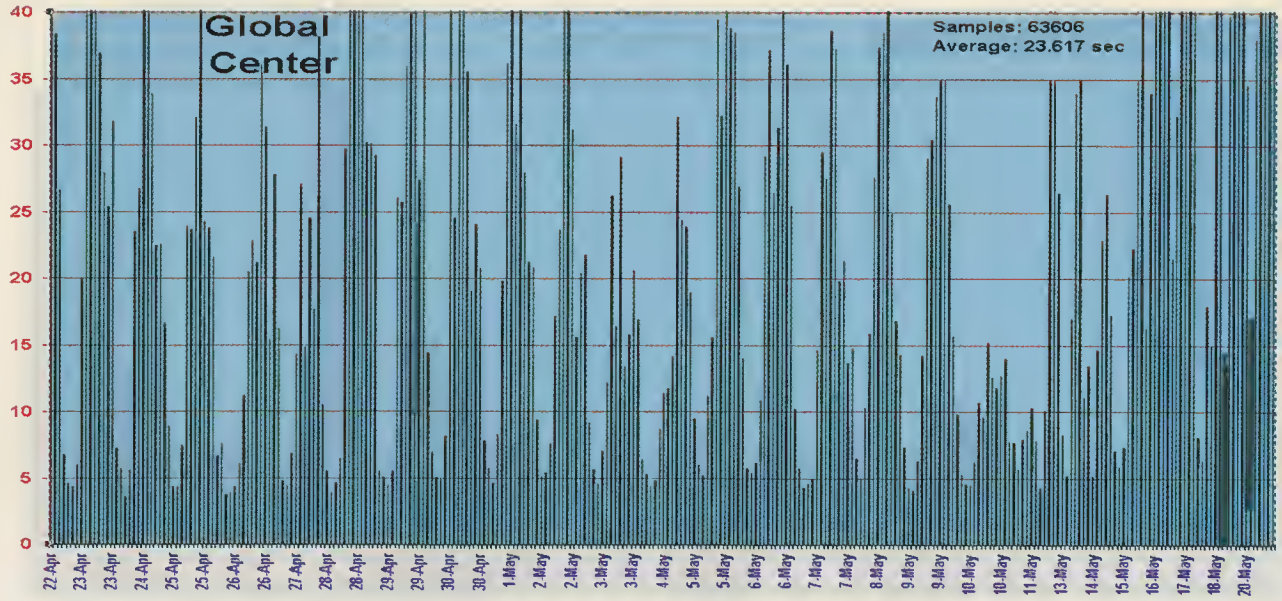


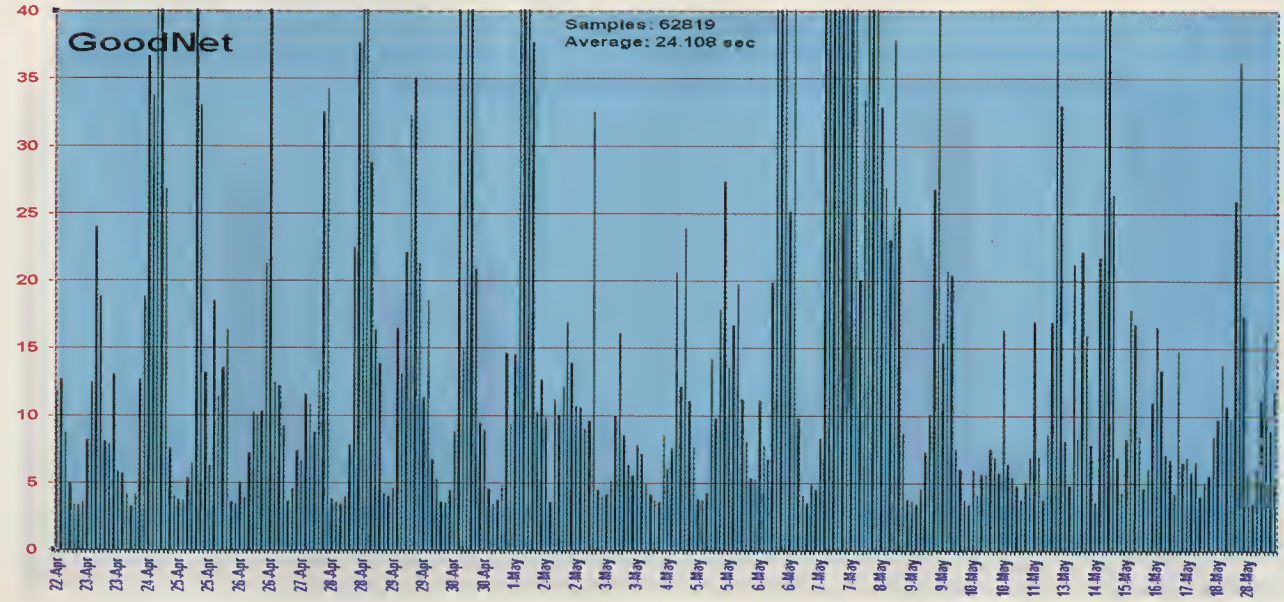
GridNet

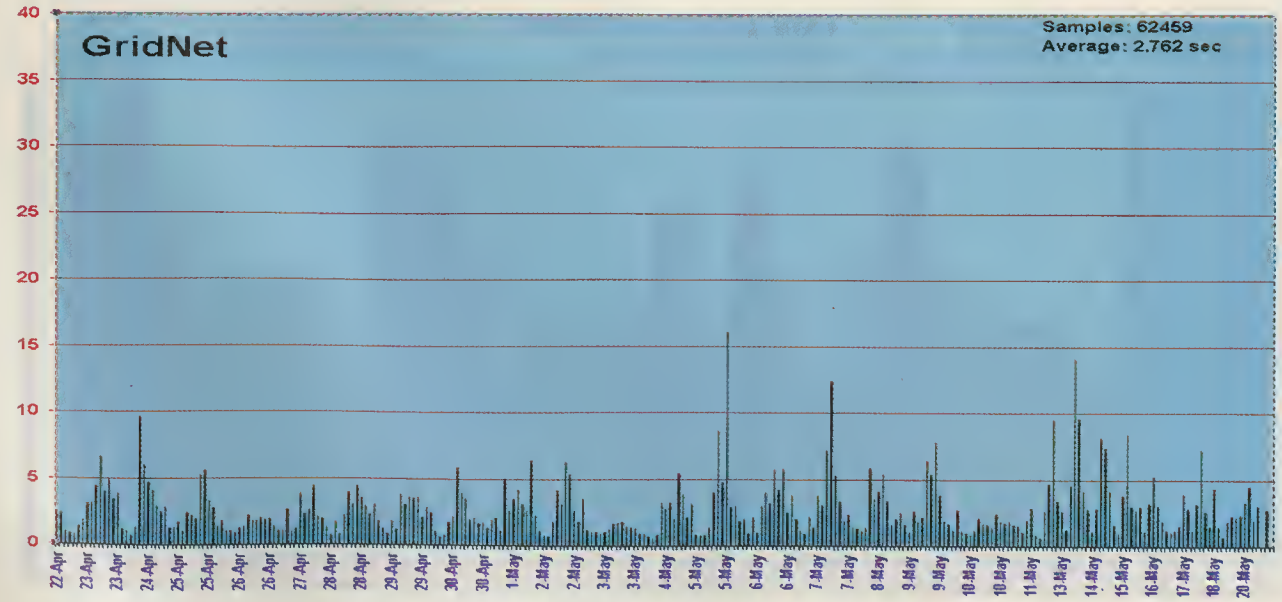
DATE: 04/20/97 thru 05/20/97
DATA POINTS: 70364

AVERAGE: 2.949 sec
DEVIATION: 19.418 sec




Global Center
Samples: 63606
Average: 23.617 sec

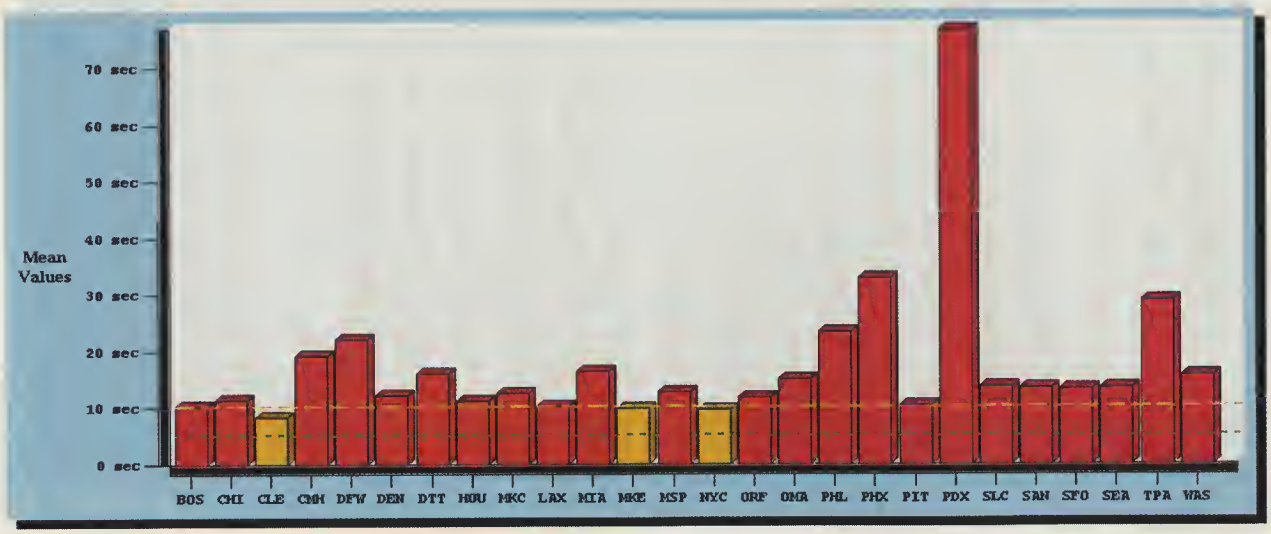

GoodNet
Samples: 62819
Average: 24.108 sec


GridNet
Samples: 62459
Average: 2.762 sec

IBM Global Net

DATE: 04/20/97 thru 05/20/97
DATA POINTS: 57459

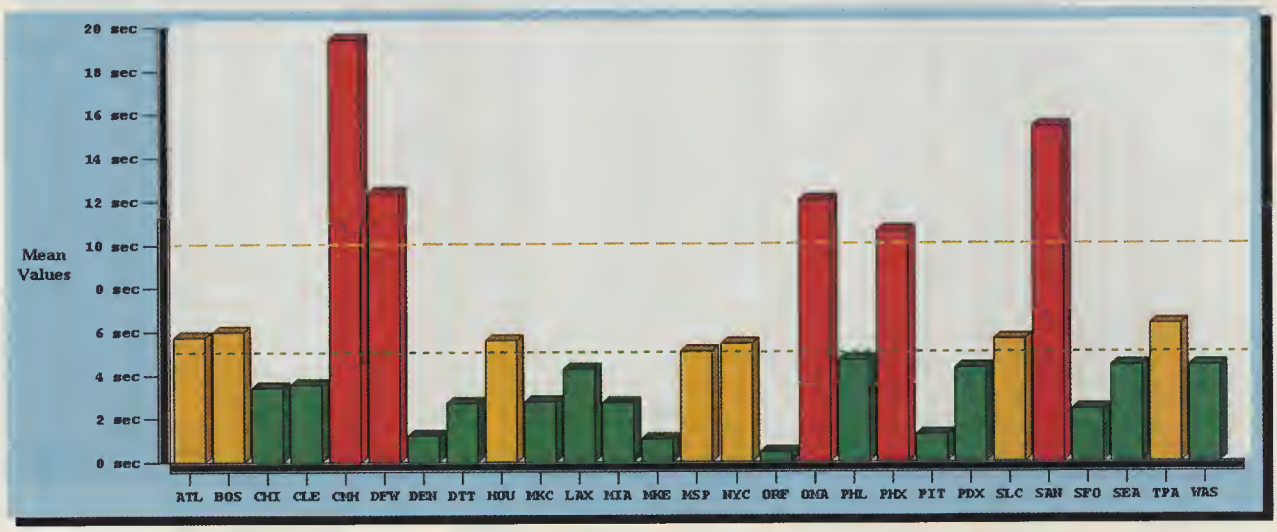
AVERAGE: 17.394 sec
DEVIATION: 52.624 sec



IDT

DATE: 04/20/97 thru 05/20/97
DATA POINTS: 72547

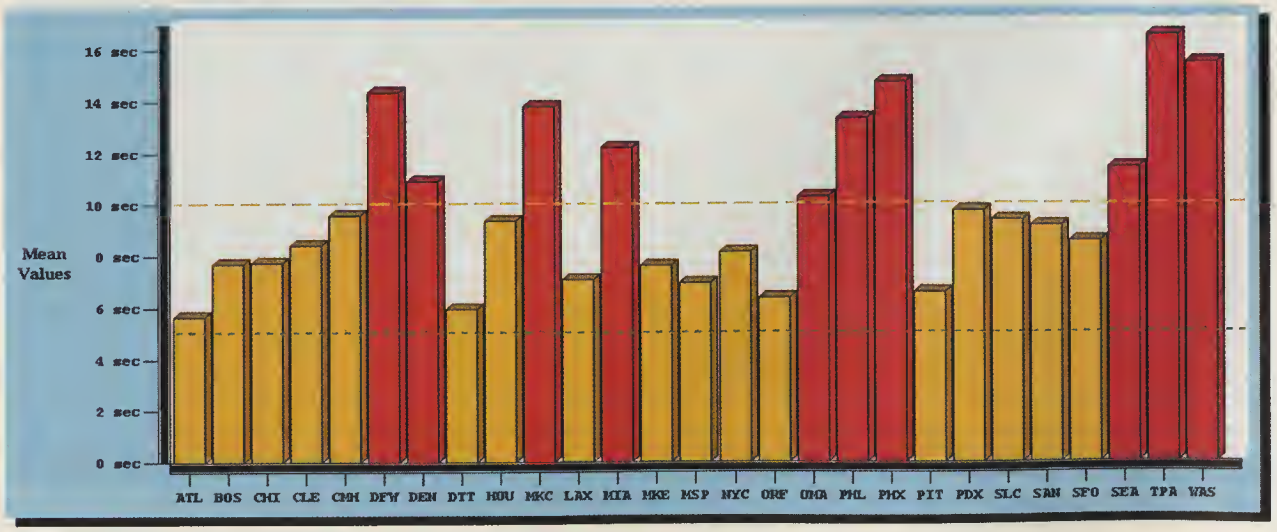
AVERAGE: 5.519 sec
DEVIATION: 39.145 sec

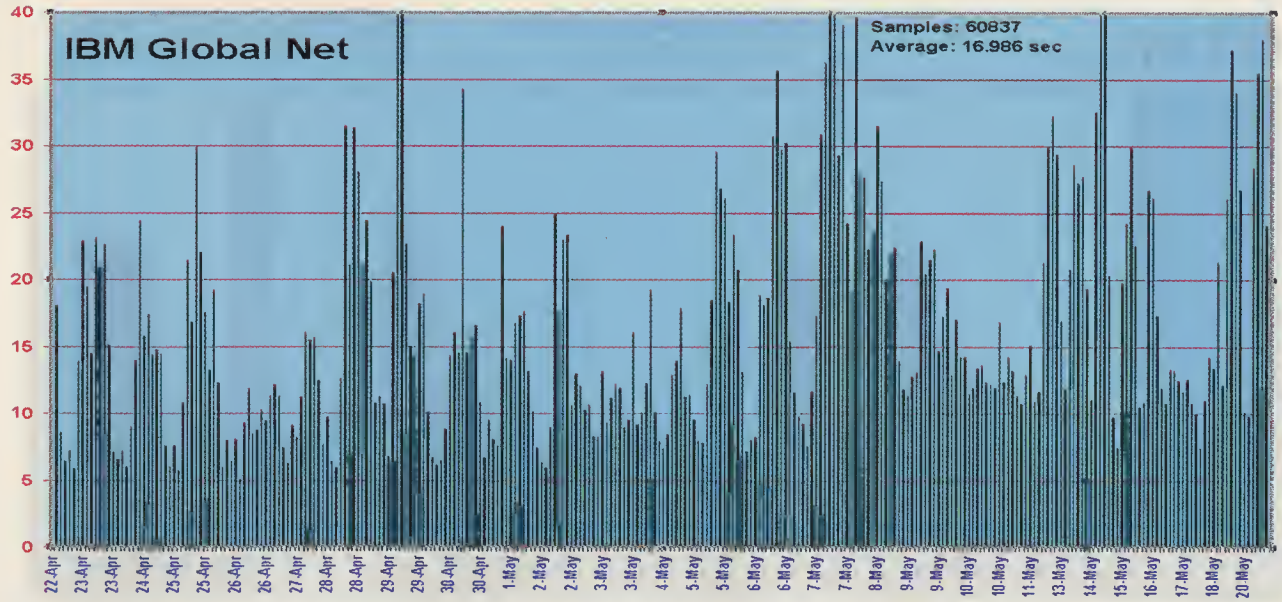


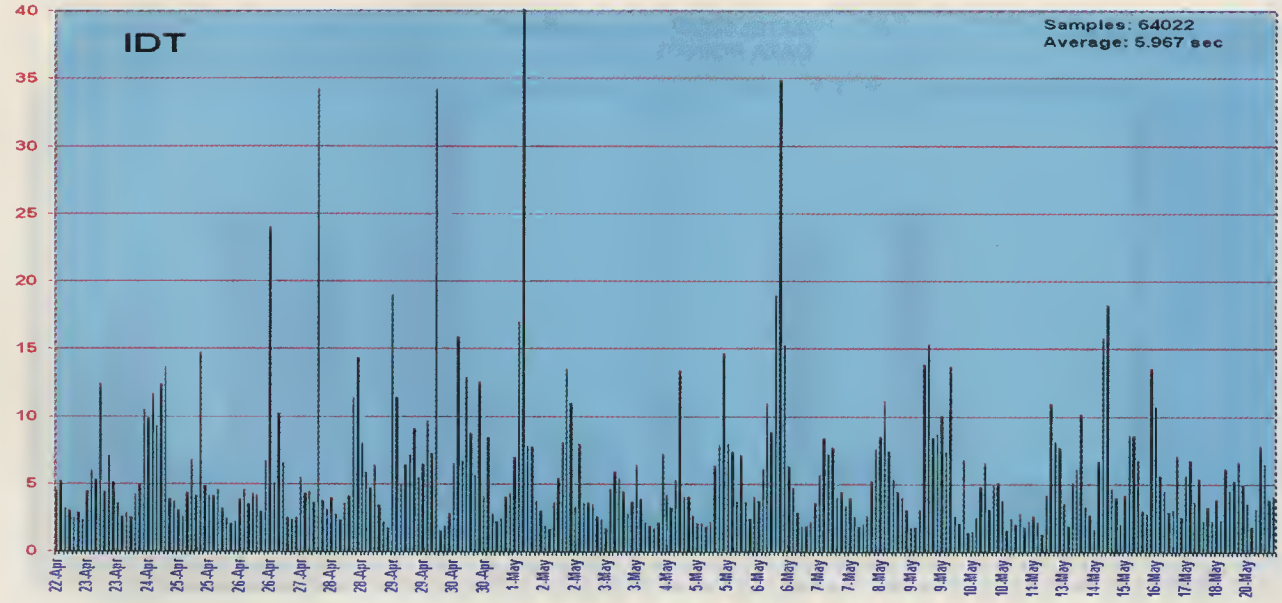
internetMCI

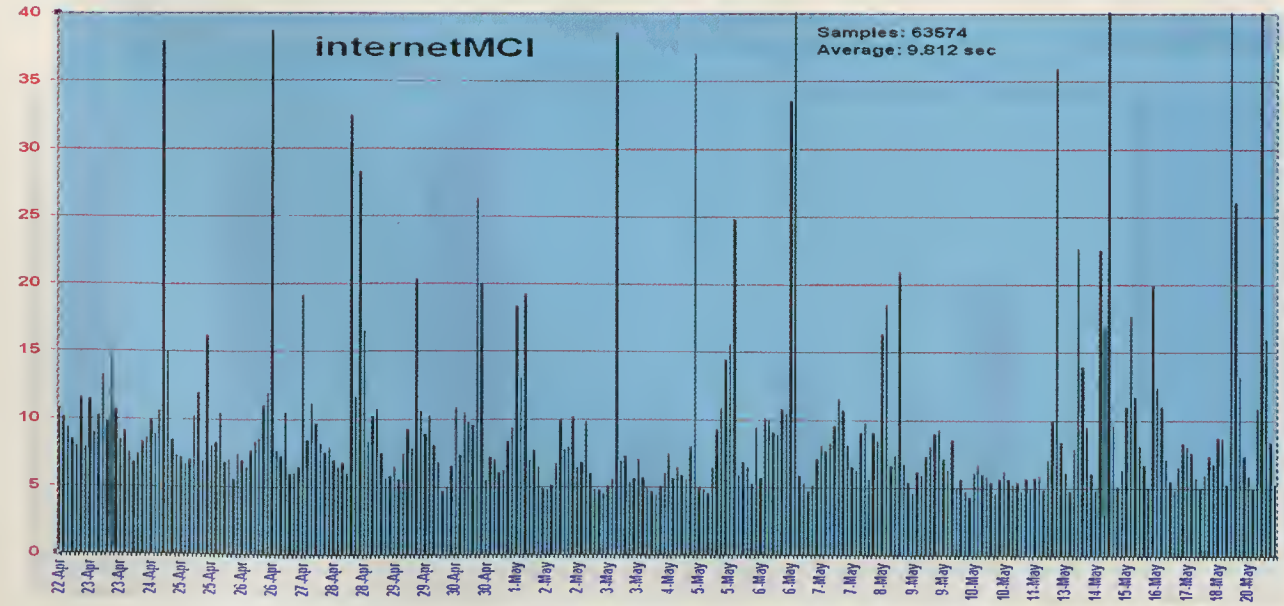
DATE: 04/20/97 thru 05/20/97
DATA POINTS: 61833

AVERAGE: 9.851 sec
DEVIATION: 61.833 sec




IBM Global Net
Samples: 60837
Average: 16.986 sec

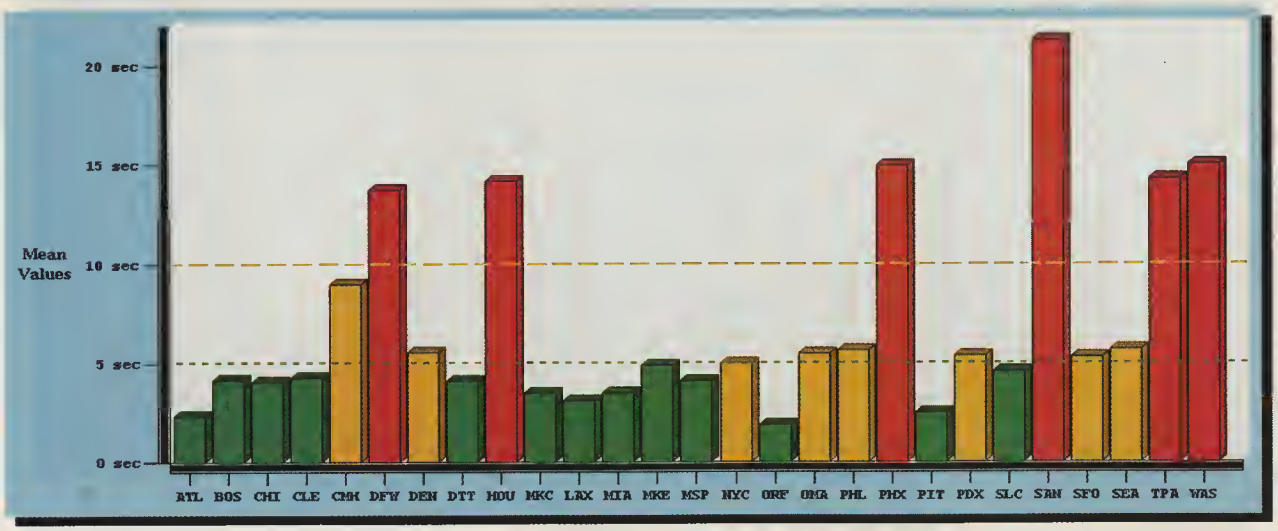

IDT
Samples: 64022
Average: 5.967 sec


internetMCI
Samples: 63574
Average: 9.812 sec

iSTAR

DATE: 04/20/97 thru 05/20/97
DATA POINTS: 65772

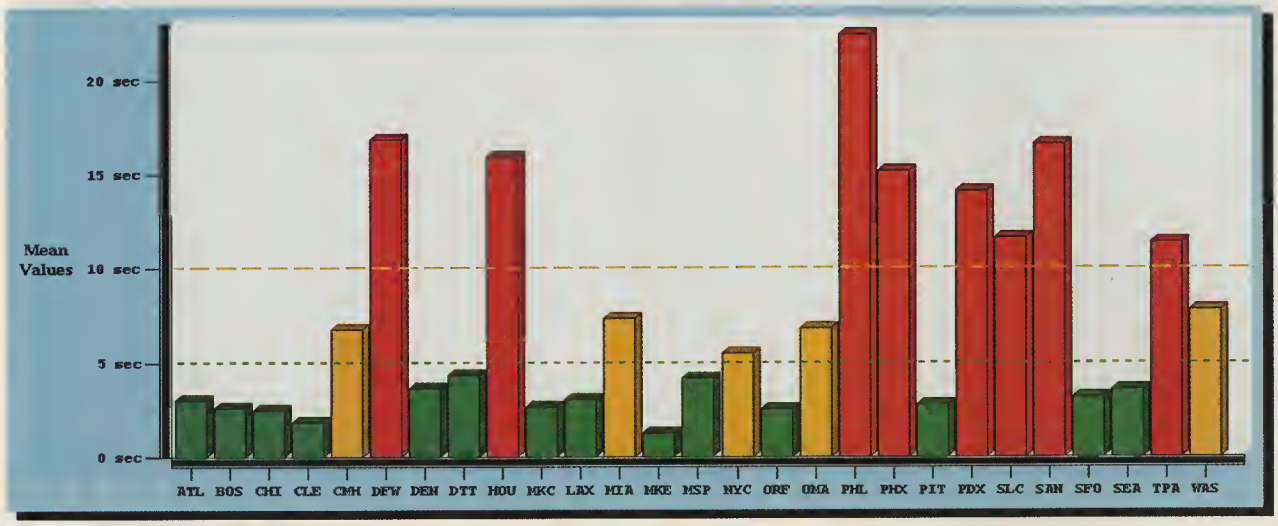
AVERAGE: 6.814 sec
DEVIATION: 36.866 sec



NapNet

DATE: 04/20/97 thru 05/20/97
DATA POINTS: 72259

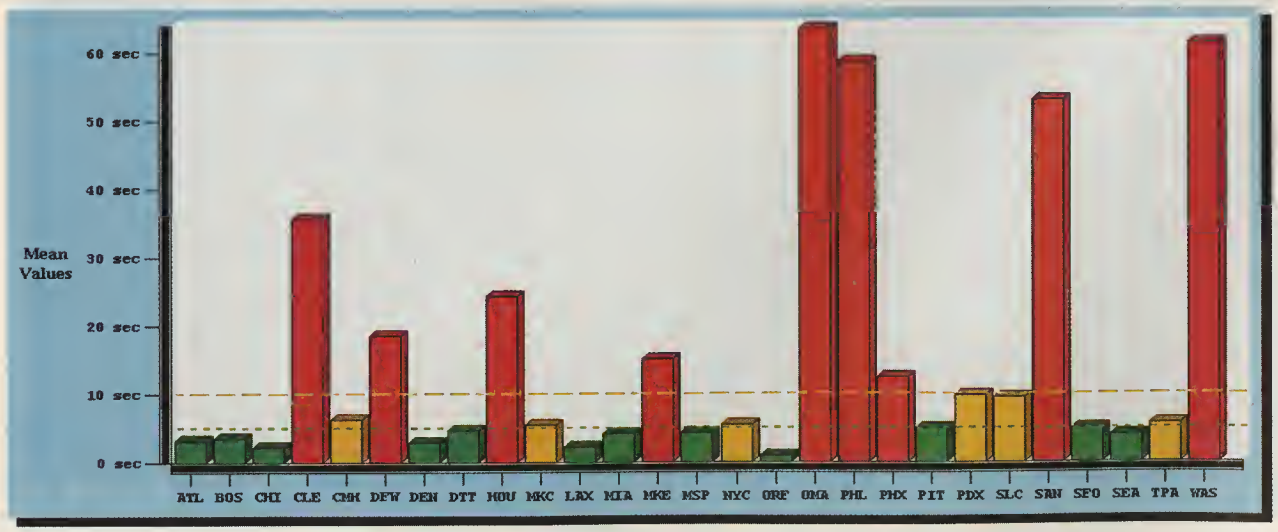
AVERAGE: 7.223 sec
DEVIATION: 47.785 sec

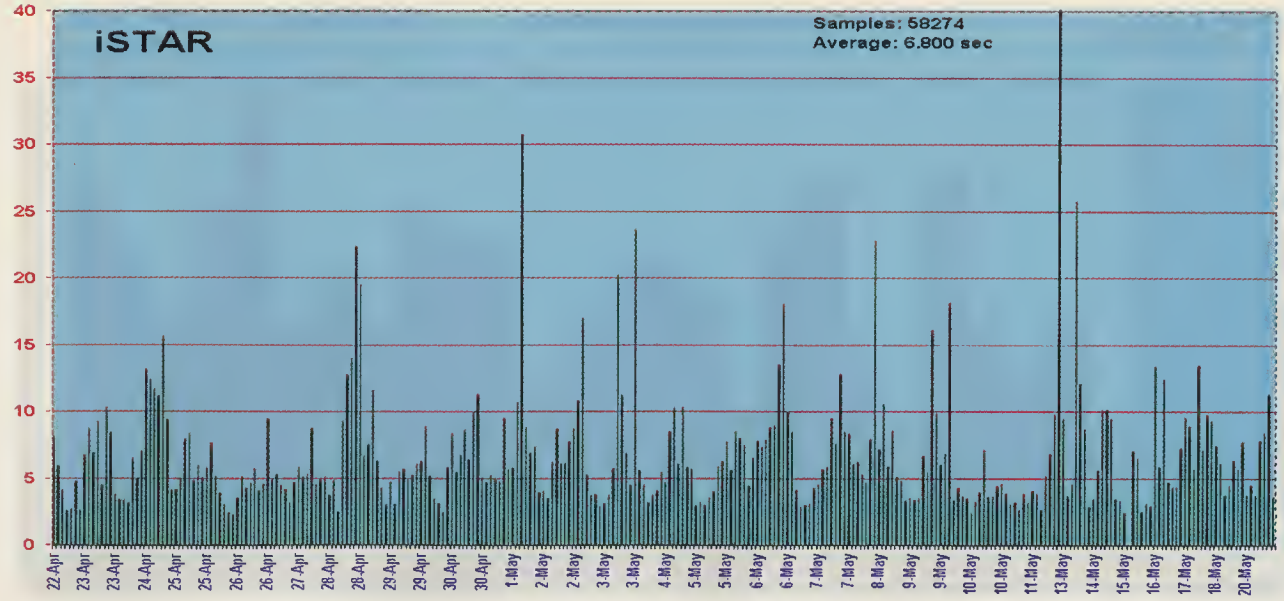


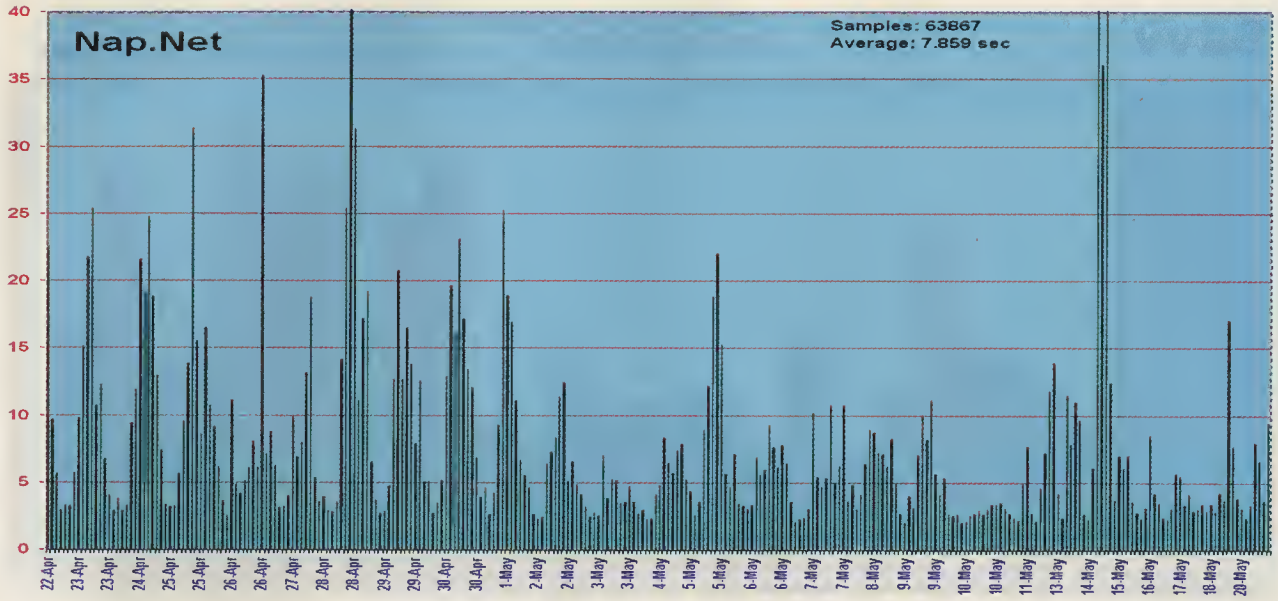
NetRail

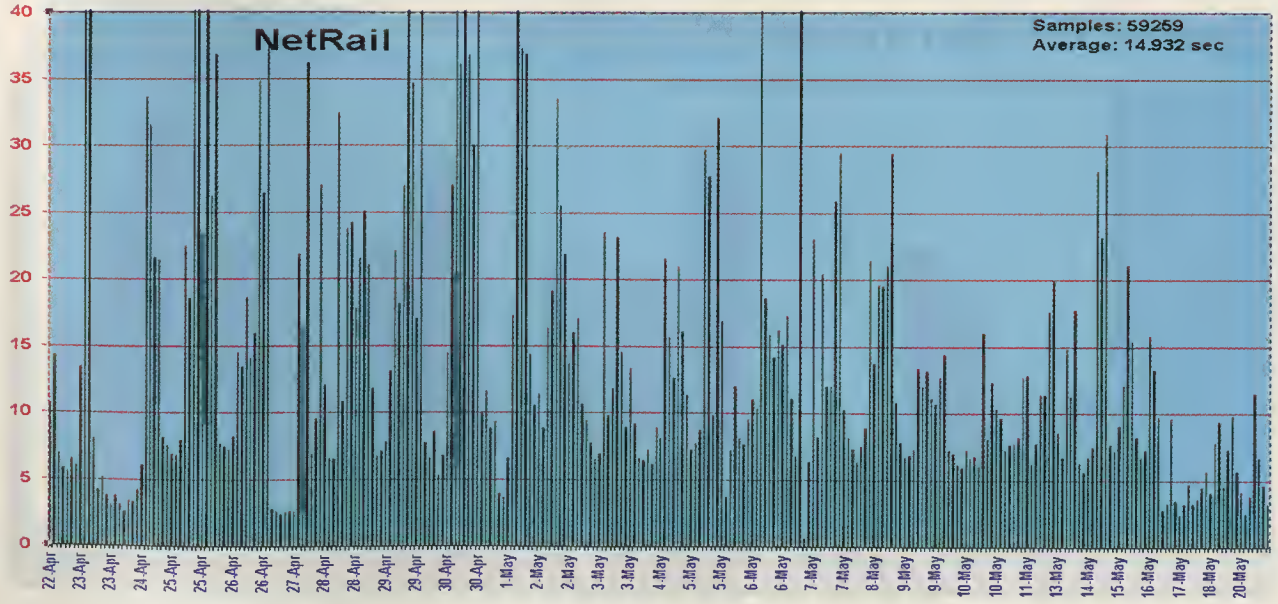
DATE: 04/20/97 thru 05/20/97
DATA POINTS: 67077

AVERAGE: 12.833 sec
DEVIATION: 78.065 sec




iSTAR
Samples: 58274
Average: 6.800 sec

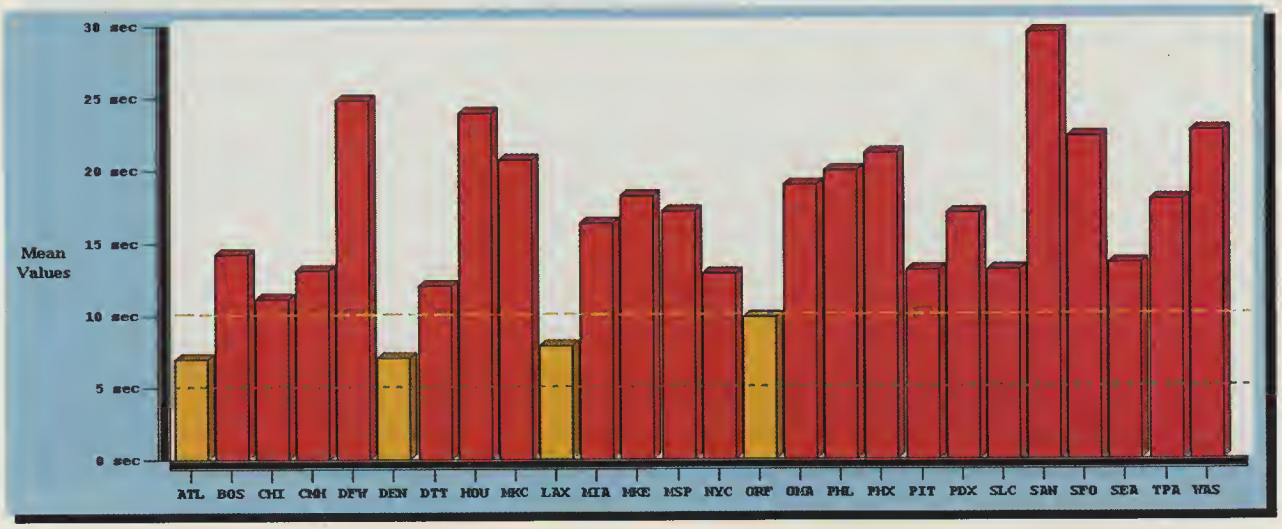

Nap.Net
Samples: 63867
Average: 7.859 sec


NetRail
Samples: 59259
Average: 14.932 sec

PSINet

DATE: 04/20/97 thru 05/20/97
DATA POINTS: 57613

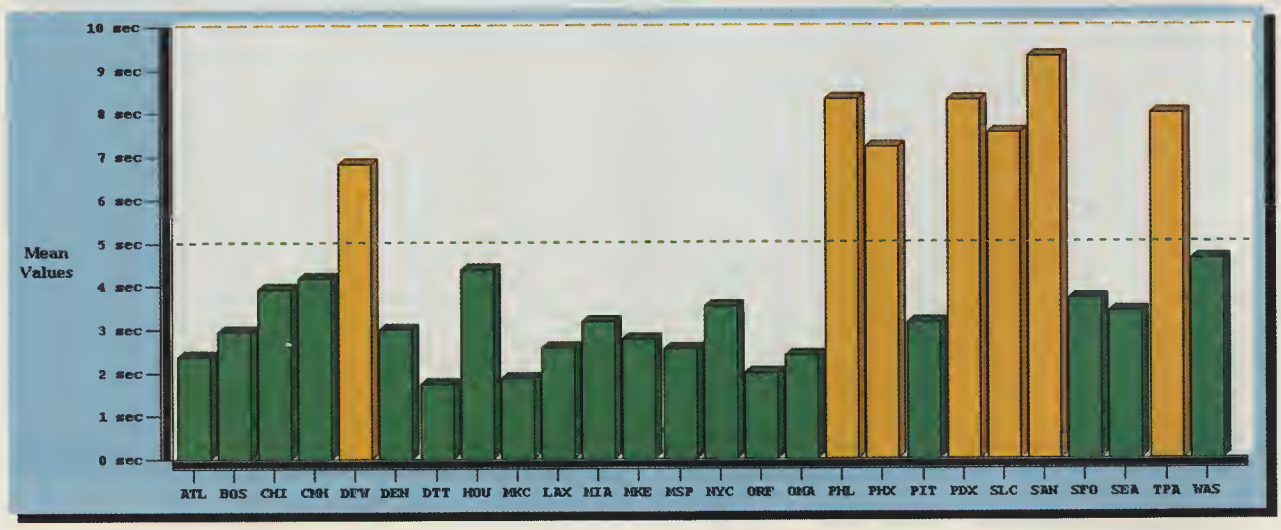
AVERAGE: 15.867 sec
DEVIATION: 88.775 sec



Savvis

DATE: 04/20/97 thru 05/20/97
DATA POINTS: 58066

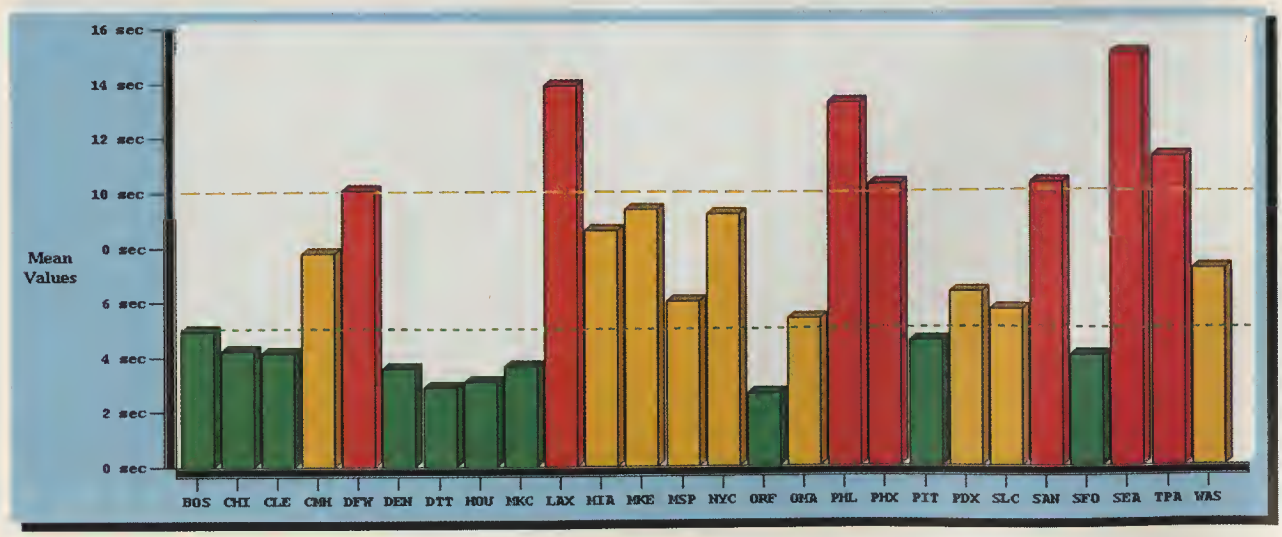
AVERAGE: 4.274 sec
DEVIATION: 13.593 sec

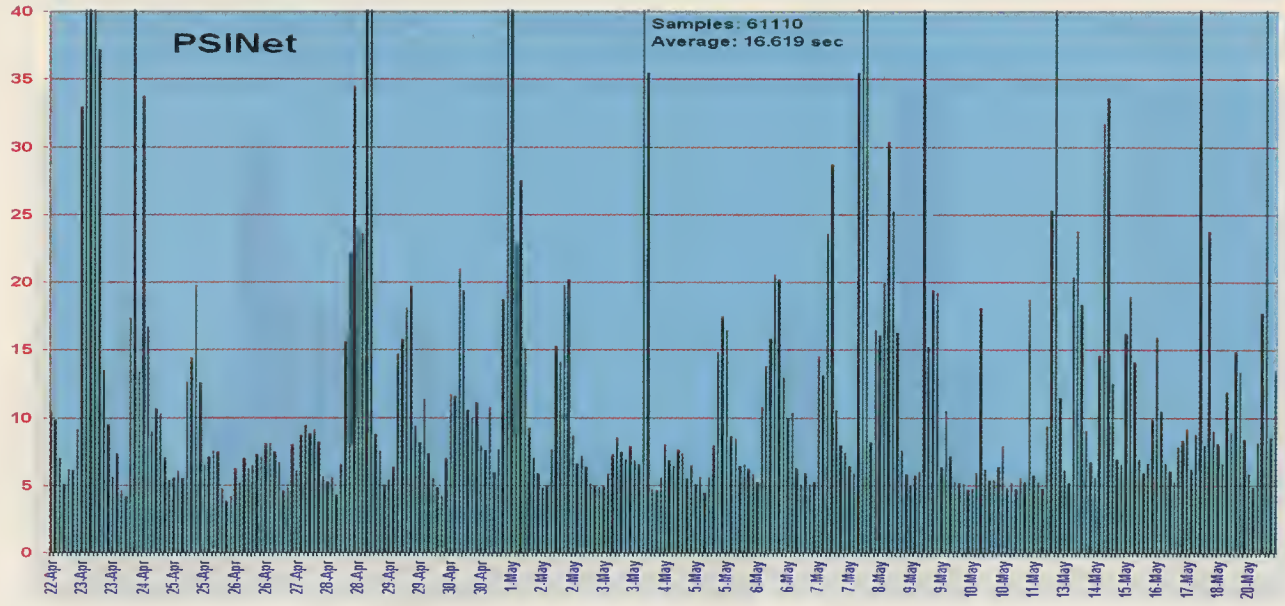


Sprint IP Services

DATE: 04/20/97 thru 05/20/97
DATA POINTS: 57152

AVERAGE: 7.464 sec
DEVIATION: 34.831 sec

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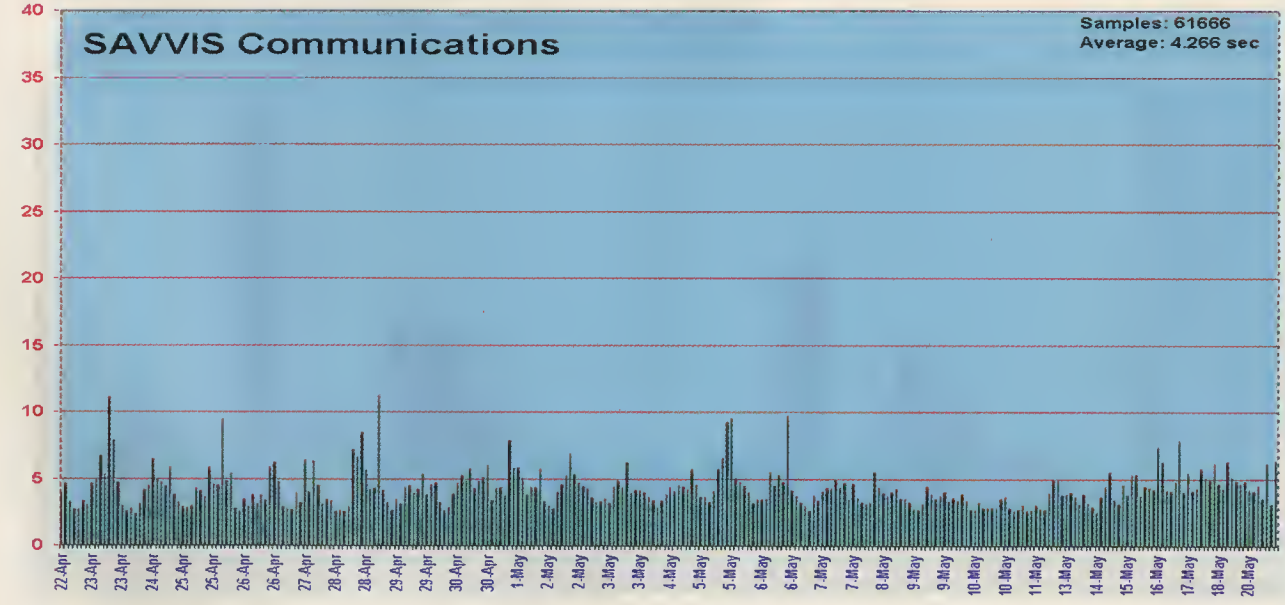
Average: 16.619 sec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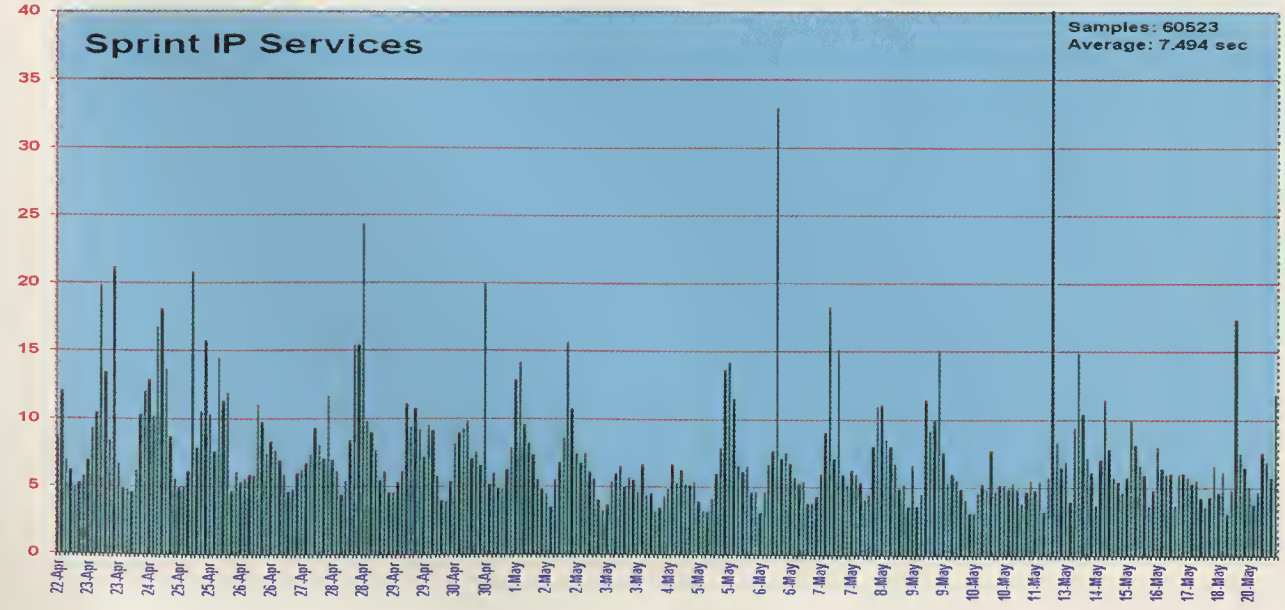
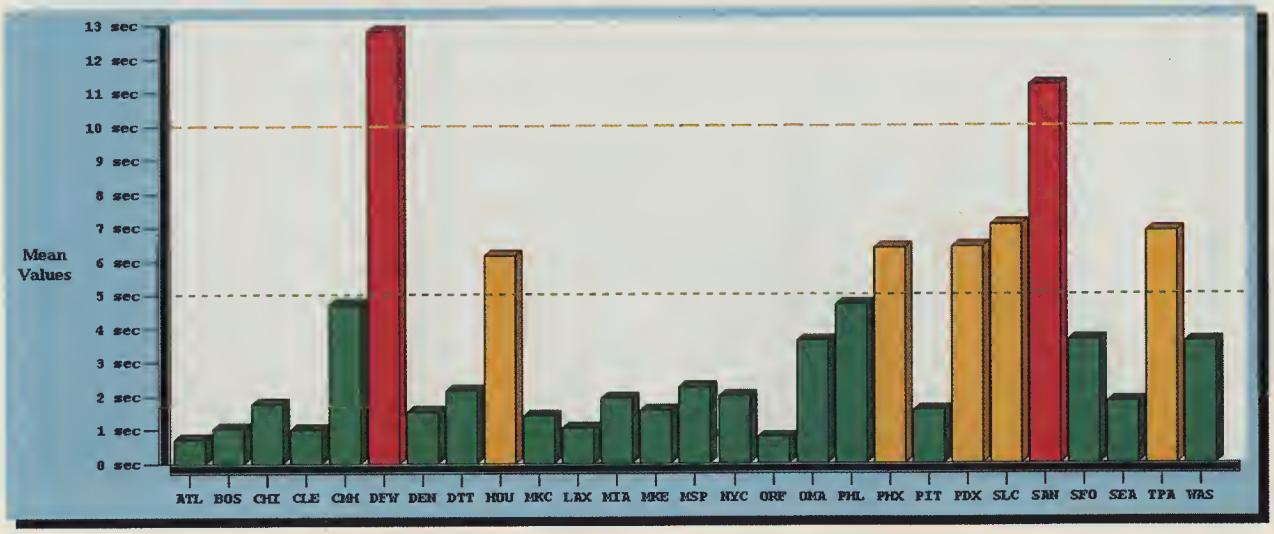

Sprint IP Services
Samples: 60523
Average: 7.494 sec

UUNET

DATE: 04/20/97 thru 05/20/97
DATA POINTS: 60420

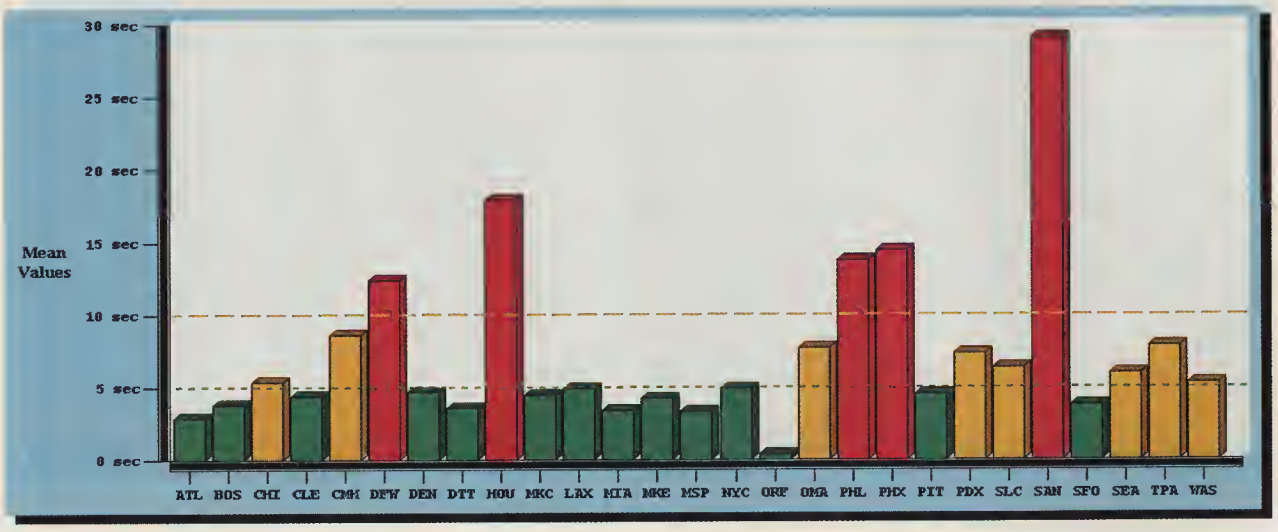
AVERAGE: 3.473 sec
DEVIATION: 20.978 sec

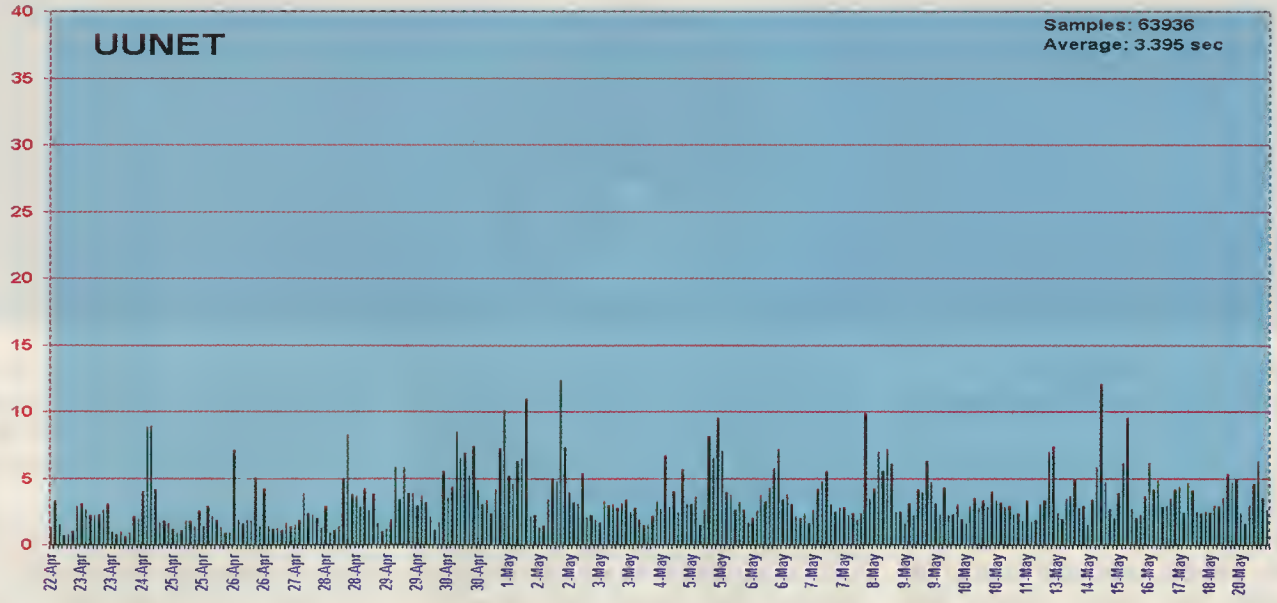


VisiNet

DATE: 04/20/97 thru 05/20/97
DATA POINTS: 71762

AVERAGE: 6.934 sec
DEVIATION: 33.167 sec




UUNET
Samples: 63936
Average: 3.395 sec
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27-Apr
28-Apr
28-Apr
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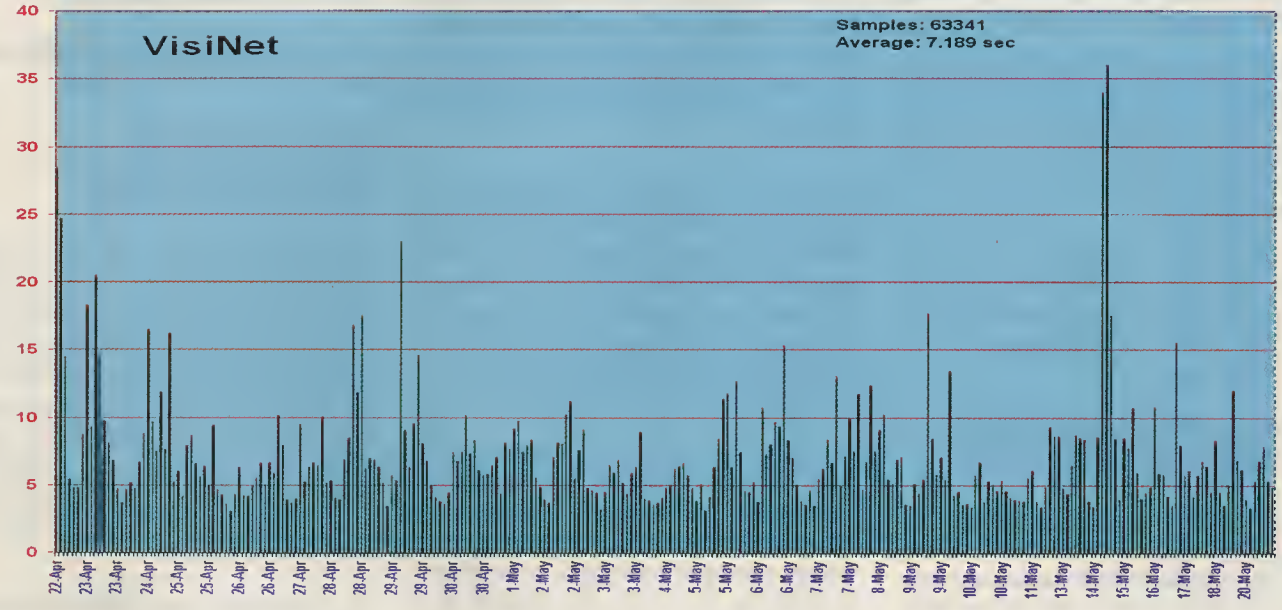
VisiNet
Samples: 63341
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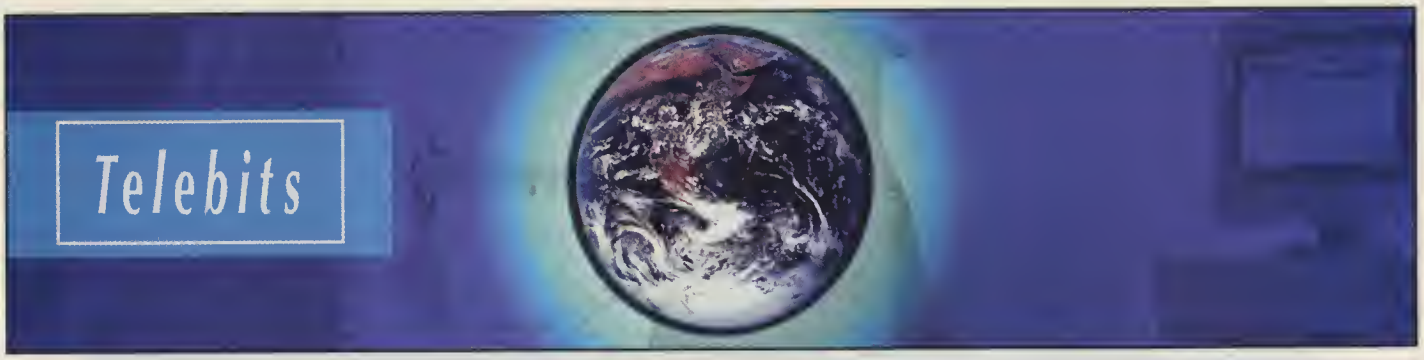


PACIFIC BELL INTERNET REACHES 100,000 SUBSCRIBERS

Pacific Bell entered the Internet service provider market just over a year ago, as did many other RBOCs. In May, the company became the first RBOC to top the 100,000 subscriber mark. The landmark also makes Pacific Bell Internet Services the fastest growing Internet provider in California.

Bob Lee, the head of Pacific Bell's Internet services subsidiary said, "There's a reason why we're considered the most popular and fastest-growing ISP in the state and it's simple — we offer the best service possible."

Expanding on its high-quality service, Pacific Bell Internet Services plans to offer enhanced services later this year, including nationwide roaming and personal web pages.

US ROBOTICS GUARANTEES x2 – STANDARD EXPECTED SOON

US Robotics has announced several programs and products intended to establish x2 as the dominant 56 Kbps analog technology in the market. USR's "x2 Delivers" program offers free upgrades, a 30-day money-back guarantee, and a free month of Internet service. As USR and other modem makers await a 56K standard that will be adopted in 1998 by the International Telecommunication Union (ITU-T), the Skokie, Illinois-based modem maker says that it will upgrade, free of charge, its x2 line of modems. Consumers who have bought, or plan to buy, x2 modems will be entitled to free upgrades to the ITU-T standard once it is adopted. The following modems can be upgraded: x2 Sportster, x2 Courier, and Megahertz x2 PC cards. USR's Total Control remote access servers, NETServers, MP modem pools, and Courier I-Modems can be upgraded, as well. Furthermore, customers who took advantage of the upgrade to x2 can upgrade to the new 56K analog standard.

US Robotics is also offering one free month of Internet service with the purchase of an x2 modem. Through September 15, 1997, US Robotics will reimburse any individual — up to **$25** — in the United States or Canada who purchased an x2 modem at retail and used that modem to connect to one of 350 ISPs who currently offer x2 service. Consumers who wish to receive a free month must mail proof-of-purchase, along with a completed form (available at `www.usr.com/x2delivers/freemonth.html`), to USR before November 15, 1997.

Finally, as part of its "x2 Delivers" program, US Robotics is offering an unconditional money-back guarantee for all x2 modems purchased at retail. Customers who are not satisfied with their x2 modems, for any reason, may return them, within 30 days, to the place of purchase for a full refund – no questions asked.

US Robotics maintains a list of ISPs who are live with x2 at `http://x2.usr.com/connectnow`. The company has also launched its I-team service which, among other things, is dedicated to helping its ISDN and digital customers deploy x2. The I-team is a free service that helps ISPs determine if their lines are properly configured for x2. As part of the service, USR will even check availability, coordinate installation, and order PRI lines for ISPs who plan to offer x2. The ISPs, of course, will have to pay their local telco for installation and monthly fees. The I-team service is available now at **1-888-USR-ISDN** or at `http://totalservice.usr.com`

LUCENT'S HIGH-SPEED LOW-VOLTAGE MODEM CHIP

Lucent Technologies has introduced its Mars chip set, a 56 Kbps modem chip that requires less voltage than standard modem chips. The Mars chip set uses 3.3 volts, compared to other modems which use 5 volts

Laptop computers should benefit the most from these chips since they don't require bridge clips. This will reduce the number of devices on the computer's system board.

Lucent sent samples of the chip to Toshiba. As a part of field testing of K56flex technology, the chip will be used this summer in testing with America Online and other end-users.

Lucent will sell the chip for **$65** each for quantities of 10,000 or more.

RAMP NETWORKS AND EARTHLINK OFFER SOHO-ISDN PACKAGE

EarthLink Network will bundle Ramp Networks' WebRamp family of products with its National LAN ISDN Service. The service, which is focused on the small office/home office (SOHO), offers 160 hours of ISDN Internet access, and four mailboxes for **$99.95** per month. There is also a one time setup fee of **$149**. National LAN ISDN Service customers will have their choice of two WebRamp products.

The WebRamp Entr ISDN access device will sell for **$599**. It has a four-port 10Base-T Ethernet hub and two RJ-11 analog telephone ports. WebRamp IP, which has the same features as the WebRamp Entr except for an eight-port Ethernet hub, will sell for **$749**.

EarthLink Network's phone number is **(800) 395-8425**, and its web site is `www.earthlink.com`. Ramp Networks can be reached by phone at **(408) 988-5353** or on the Web at `www.rampnet.com`.

HACKER CRACKS 56-BIT ENCRYPTION STANDARD

An employee at iNetZ, an online commerce provider in Salt Lake City, cracked the 56-bit DES encryption standard deemed "adequate" by the U.S. Government.

"We hope that this will encourage people to demand the highest available encryption security," said Jon Gay, vice president of INetZ, "such as the 128-bit security provided by C2Net's Stronghold product, rather than the weak 56-bit ciphers used in many other platforms."

Michael Sanders, the man who cracked the cipher, used a program that searched out idle moments on Internet computers and performed calculations, thus "farming out" algorithms to thousands of computers.

Most browsers in the United States use 40-bit encryption, which is less powerful than the 56-bit encryption that Sanders cracked. In 1977, when the 56-bit DES cipher was adopted as the national standard, experts predicted that it would take hundreds of years to crack.

Mathematically, 56-bit encryption can be cracked by using 65,000 times more work than is required to crack 40-bit encryption, which can be deciphered in less than an hour. Likewise, 128-bit encryption would require 4.7 trillion billion times as many calculation as it takes to crack 56-bit encryption.

ISP ACCELERATOR OFFERS INEXPENSIVE 56K

VersaNET is offering its ISP-Accelerator remote access server with 56 Kbps modems for **$395** per port. In addition to the modems, which use K56flex technology, the integrated system also includes a router, communications server, channelized T-1 interface, and a high-speed WAN interface.

The ISP-Accelerator includes up to 48 digital 56 Kbps modems or thirty-six 33.6 Kbps ports in a 19" rackmountable chassis. An optional CSU/DSU is also available. It can handle as many as two channelized T-1 connections and two high-speed V.35 WAN interfaces.

A fully configured 48-port 56K ISP-Accelerator sells for **$18,960**. A 36-port analog 33.6K modem unit sells for **$11,174**. VersaNET Communications can be reached at 628 North Diamond Bar Blvd., Diamond Bar, CA 91765; by phone at **(909) 860-7968**; on the Web at `www.versa-net.com`; or through e-mail at `sales@versanetcomm.com`.

FREE INTERNET SERVICE LAUNCHED – MORE TO COME

"It's like broadcast television, only better," says Tritium Network President Michael Lee. The Cincinnati-based ISP is hoping to bring free Internet service to the world through advertising revenue. In April, the company went online offering free Internet service to the people of Cincinnati. Access fees were subsidized by 30 second advertising spots similar to television and radio.

Tritium is planning to expand into Atlanta, Boston, Chicago, Dallas, Los Angeles, Miami, New York, Philadelphia, San Francisco and Washington DC by this fall. The company hopes to have 10,000 subscribers in each of its first eleven markets in the first six months.

Tritium can be reached by phone at **(800) 755-7205** or through the Web at `www.tritium.net`.

PANAMSAT MERGES WITH GALAXY SATELLITE SERVICES

On May 8, PanAmSat shareholders approved a merger with Galaxy Satellite Services, a division of Hughes Communications, Inc. The new company will retain the name of PanAmSat Corporation. Shareholders could choose between one of three options. The standard election included **$15** and half a share of the new company for each previously held share. For the stock election, shareholders received one share of the new company for each share previously held. The cash election gave each shareholder **$16.38** and .45 shares of the new company for each previously held share.

PanAmSat President and CEO Frederick A. Landman said, "In every aspect of our business, we will continue to provide our customers with the very best and most advanced satellite broadcasting, telecommunications and Internet services available anywhere in the world." The Greenwich, Connecticut-based company currently operates a 14 satellite network, and plans to launch seven more by the end of 1998. Its PAS-5 Atlantic Ocean Region satellite will be launched in July 1997.

PanAmSat (`www.panamsat.com`) operates international satellite Internet connections to countries on five continents.

SMART TECHNOLOGIES OPENS AUSTIN NAP

SMART Technologies has opened the SMARTNAP in Austin, Texas. It is the largest private network access point in the United States, spanning over 10,000 square feet in two Austin locations. AT&T, BBN Planet, DIGEX, MCI, Sprint, and UUNET all have connections at the SMARTNAP through six DS-3 links.

A 540 Mbps OC-12 SONET ring connects the two SMARTNAP locations in Austin, where local businesses can connect via 100 Mbps Fast Ethernet. The SMARTNAP is maintained 24x7 by network engineers and security guards.

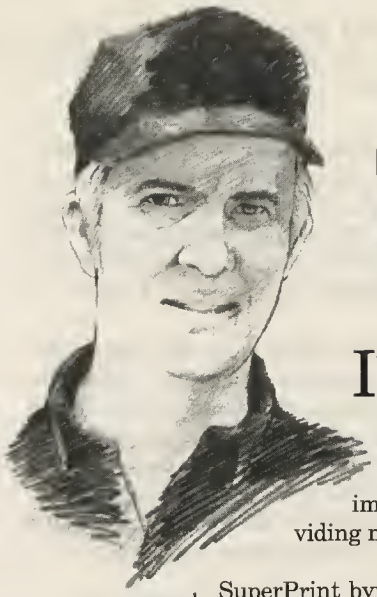
Sales and marketing for all connections to and products associated with the SMARTNAP is being handled by Signet Partners, who can be reached by calling **(512) 306-0700**. E-mail can be sent to `getsmart@sig.net`. Detailed information is available at the SMARTNAP's web site at `www.smart-nap.net`.

BELL ATLANTIC TO PROVIDE ADSL TO HOMES BY 1998

Bell Atlantic says it will begin offering ADSL service to consumers in the middle of 1998. The RBOC announced its plans along with a four-year deal with DSC Communications Corporation (`www.dsccc.com`), said to be worth several hundred million dollars. DSC will provide Bell Atlantic with Westell's ADSL modems for use in homes and small businesses. However, Bell Atlantic said it will sell residential ADSL services before focusing on business connections.

One week prior to Bell Atlantic's announcement, Westell announced that its ADSL modems would be used in DSC's line of telephone access equipment. These ADSL devices can download data at 6 Mbps.

Bell Atlantic has been testing ADSL with approximately 250 customers in Virginia since last September. The customers were given unlimited, high-speed Internet access for **$60** per month. However, when the service starts next summer, Bell Atlantic says that ADSL will start at **$30** per month for customers who buy their own ADSL terminal adapters. That price will not include Internet connection fees. Customers will be able to choose from several select regional ISPs, or use Bell Atlantic's Internet service. ◆



TECHNOLOGY FRONT

by Jim Thompson
Western News Service

SPEED UP YOUR PRINT JOBS WITH SUPERPRINT 5.0

If you have any problems with printing or are tired of waiting for print jobs, then SuperPrint, from Zenographics, Inc., is just what you need. SuperPrint will speed up all your print jobs and improve the quality of printing, while providing more control over the printing process.

Jim Thompson is Managing Editor of Western News Service in Los Angeles, California. CompuServe: **72777,2677**, MCI Mail: **321-4127**, **mailto:** jim.thompson @wnsnews.com

SuperPrint bypasses the 16-bit/32-bit hybrid printing architecture of Windows 95. In some cases, this Windows 95 printing architecture can significantly reduce the printing time. The biggest difference in speed comes when running under Windows 3.1x, since SuperPrint replaces the slow print manager spooler with the much faster and more efficient MetaFile spooling. Of course, nothing can actually speed up the printer itself, however, SuperPrint's 32-bit processing increases the speed of rasterization and multitasking to improve your computer's foreground performance while printing is in progress.

SPEED UP YOUR PRINT JOBS

In my tests, documents that contained only text did not seem to benefit from SuperPrint. However, those with full page bitmaps were about 20 percent faster, and those with full-page graphics were as much as 50 percent faster. The bottom line is that the more complex the page, the faster SuperPrint delivers the final product.

CONTACT:

SuperPrint 5.0
Zenographics
34 Executive Park
Irvine, California
92614

Tel: (714) 851-6352
http://www.zeno.com

Price: **$99** for basic package on CD-ROM. **$195** to **$1,995** for additional drivers for specific printers.

SuperPrint runs under Windows 3.1x, Windows 95, Windows NT 3.51/4.0. According to Zenographics:

under 32-bit Windows NT 3.51 and 4.0, SuperPrint provides imaging enhancements and drivers not otherwise available under Windows NT. SuperPrint 's core technology includes the only NT 3.51 and 4.0 drivers available for most printers. Under Windows 3.1x, SuperPrint adds Win32s to Windows' 16-bit print engine. This enhancement enables 32-bit printing with Windows 3.1x's 16-bit architecture. A portable architecture also is added to the operating system for smoother multitasking.

Through external filters, SuperPrint , allows you to both preview and print file types other than Windows 95 Enhanced MetaFiles (EMF), text, and "raw" (Windows 3.1x) printer data files. This includes PostScript files, such as those created in Quark or found on the World Wide Web, without a PostScript printer. The PostScript filter is a full-featured, level 2 PostScript language interpreter that translates PostScript page descriptions and Encapsulated PostScript (EPS) files into Windows GDI. You can preview and print PostScript Level 2, JPEG, GIF, TIFF and BMP files. This preview capability saves time and money by eliminating unexpected results in typeface mapping and font metrics often associated with PostScript translation.

SHARPER IMAGES

I also found that the images printed through SuperPrint are much sharper than those printed through the standard Windows print spooler. Integrated in the program are drivers that control sharpness, contrast, lightness, saturation and dot gain. Each driver, called *SuperDrivers,* is reportedly pre-tuned to its corresponding printer, optimizing imaging enhancement. Image filters also add lightness and contrast enhancements. You will have to invest some time in getting all of these filters adjusted just right, but the improved quality is worth the effort.

The main component of SuperPrint is SuperQueue. This application lets you view, organize and modify your print jobs. You can use this instead of the Printers folder in Windows 95 or Print Manager in Windows NT or 3.1x to manage printing. SuperQueue also lets you print and preview bitmap and PostScript files without the need for any other application. This is accomplished via filters. The filters for bitmap files provide image enhancement to optimize the quality of the final output.

Another big advantage of SuperPrint is that it provides drivers for printers that may not have their own or for those for which there are no native Windows drivers available. We had an older Kodak Dye Sublimation printer that needed a specific SCSI card and which would only run under Windows 3.1, or on a Macintosh. Since the printer cost nearly $10,000, we certainly did not want to just throw it away. Before discovering SuperPrint, our only choice was to have a separate machine dedicated solely to printing with this one printer. SuperPrint not only allows us to print on this machine with any SCSI card, but it also increased the speed of our print jobs by nearly 40 percent.

Those using high-end printers (see "Printers Supported by SuperPrint 5.0") will definitely want SuperPrint 5.0.

WINDOWS SPOOLING AND PRINTING — HOW IT WORKS

Information provided by Zenographics, Inc.

Windows 95 and Windows NT use a very different way of spooling print jobs than previous versions of Windows — they spool page descriptions rather than raw printer data. SuperPrint has been providing this spooling method to older versions of Windows since 1990, and continues to provide the fastest and most complete spooling solution for all current Windows versions.

1. WHAT HAPPENS WHEN YOUR APPLICATION PRINTS

When you click File / Print, the application asks Windows GDI and the printer driver how it should send the page description. Variables include the abilities of the printer driver (such as "stretching" bitmap images), and physical properties of the printer (like resolution and paper sizes). Under Windows 95 and NT, the datatype is also determined by the driver.

2. HOW THE PAGE DESCRIPTION IS SPOOLED

The page description is stored on disk using the appropriate datatype. Under Windows 95, the default datatype is EMF (Enhanced MetaFile). In Windows NT, it's a iounZnl file. Since Windows 3.1x does not have print processors, and its Print Manager spools only low-level printer data, its only native datatype is RAW. SuperPrint adds the SMF (SuperMetaFile) datatype to Windows 3.1x and Windows 95; SMFs are generally speedier and more compact than raw low-level printer data.

3. WHAT THE SPOOLER DOES

The Windows print spooler keeps track of the location and order of the page description files. Under Windows 95 and NT, SuperPrint does nothing to change this operation — it is completely compatible with the spooling subsystems that are already there. Under Windows 3.1x, SuperPrint adds a whole new spool subsystem so that spooling operates just like the later, more advanced Windows versions.

4. WHAT THE PRINT PROCESSOR DOES

The print processor manages the process of sending the spooled MetaFile to the correct system-level programs so they can prepare the contents of the MetaFile for the printer driver. SuperPrint adds a new, fully compatible print processor to your Windows installation. In Windows 95 and NT, the original print processor is still there, but the SuperPrint version has many more features including the ability to use special translating filters. In Windows 3.1x, the SuperPrint 32-bit print processor is added, completely circumventing the old, slow 16-bit printing architecture.

5. WHERE THE REAL WORK GETS DONE

Now comes the job of translating the incoming data into data that will be useful to your printer driver. For nearly all modern printers, that process is called *rasterization*. To fully understand SuperPrint's advantages, it helps to know how Windows handles printing without SuperPrint.

In Windows 3.1x and Windows 95, the core of Microsoft's own rasterizer runs in a 16-bit implementation of GDI. Even though your computer is using a 32-bit microprocessor, this older 16-bit programming cannot take advantage of its capabilities. In Windows 95, even when the data is being sent by a 32-bit application, before the data is rasterized it goes through a process which Microsoft engineers call *thunking* so that the page description instructions are submitted to 16-bit GDI for rasterization

GDI uses cooperative mutlitasking, in which each program that's running takes full control of the CPU for as long as it wants before it releases control to allow other programs to run. Furthermore, while GDI is busy processing the printing code for the current job, it sets up a block called a *mutex* so no other GDI activity can be processed. Since GDI controls everything you see on the screen as well as many other Windows functions, this results in "chunky" foreground performance.

Wherever possible, SuperPrint avoids thunking and the GDI mutex. In Windows 95, the thunk layer is unavoidable when printing from an application — the print subsystem requires It. But when you're printing to a SuperDriver, SuperPrint's 32-bit rasterizer re-acquires control very quickly, and almost completely avoids the mutex. Note that when you are printing a job through a SuperQueue filter, thunking is bypassed altogether, and you get true 32-bit performance from start to finish.

SuperPrint's rasterizer (running under ZGDI32) uses true preemptive multitasking instead of cooperative multitasking; this places the Windows operating system in charge of how much CPU time each program gets. This multitasking is also multithreaded, so ZGDI32 can perform multiple functions simultaneously (for example, in the case of banded page processing, sending one band to the printer while rasterizing the next band). The result is smoother foreground performance and faster page processing.

A job that goes through SuperPrint's print processor is first examined to see if it's able to be processed by a SuperQueue filter (including the SuperMetaFile filter). If so, it is processed under ZGDI32. If the job is targeted to a 16-bit driver (a non-SuperDriver), ZGDI32 releases control and passes the job through to Windows GDI for processing.

6. THE PRINTER DRIVER

By the time the actual printer driver is called upon to perform the output, most of the work is already done. The driver handles the protocols between the printer and computer, and translates the rasterized information from the SuperPrint core into the language required by the printer. ◆

PRINTERS SUPPORTED BY SUPERPRINT 5.0

High-end devices supported by SuperPrint include film recorders, large format printers, thermal printers, and continuous tone devices. Each high-end product also includes Standard SuperPrint, which supports laser, dot matrix, inkjet and thermal printers. SuperPrint 4.0 supports Windows 3.1, Win 95 and Win NT 3.51. Currently we are developing SuperPrint for NT 4.0.

FILM RECORDERS

AGFA
FotoColor, ProColor, ProColor Premier, ProSlide 35 PCR, PCR II, PCR II Plus, QCR, QCR-Z, and SlideWriter, Forte, Forte Plus, Alto, Alto LS

Management Graphics Inc.
Sapphire, Solitaire, Solitaire 16K, Opal*

Mirus
Turbo, Turbo II/OC, Galeria

Montage Graphics
FR1, FR2

Polaroid
Digital Palette HR 6000, CI-3000, CI-3000(S), CI-5000, CI-5000(S), ProPalette 8000

LARGE FORMAT PRINTERS

CalComp
Monochrome Electrostatic Plotters: 67436, 5725/57424, 5735/57436; Drawing Master Professional: 52424, 52436; Drawing Master: 53336, 53436, 52424, 52436, 52224, 52236, Solus 4 LED Plotter: 54424; TechJET Designer: 5424, 5436

Color Electrostatic Plotters: 68436, 68444, 5825/58424, 5835/58436 and 5845/58444, plus models above

ENCAD
NovaJet II (D & E), III, 4 (D & E), CadJet 2 (D & E), Pro (36" & 50")

Hewlett Packard
DesignJet 200 (D & E), 600 (D & E), 250 (D & E), 600 (D & E), 650C (D & E), 750C (D & E)

THERMAL PRINTERS

CalComp
ColorMaster 5902, ColorMaster Plus 6603, 6603VRC, 6613VRC, 6613R, ColorView 5612, 5613, 5912, 5913, Model 5602, PlotMaster 5902a, 5902g [ColorMaster Presenter]

Mitsubishi
G370, G650, G6710, G2700, CP 700DS, CP-700 DU

Shinko
CHC-335, CHC-335-4A, CHC-336, CHC-345,CHC-445, CHC-545, CHC-635, CHC-645,CHC-745, CHC-845, CHC-S445, CHC-S746i,CHC-S443HV, CHC-S445-5, CHC-S500,CHC-S545-5, CHC-S745-5, CHC-S800,CHC-S545-2, and CHC-S845-2.

Tektronix
4693 DX, Phaser II DX, Phaser II SX, and Color Quick 4696 and 4697 inkjet printers

Additional thermal printers are supported in Standard SuperPrint

CONTINUOUS TONE DEVICES

Canon
CLC-300, CLC-350, CLC-500, CLC 550 CJ-10, CLC-10

Fargo
Fargo Primera, Primera Pro, Pictura 310, FotoFun, Cheetah

Kodak
XL-7700, XLT-7720, XLS-8300,XLS-8300, XLS-8600, DS-8650

Mitsubishi
S340, S3410, S3600, S6600, CP50U, CP100E, CP110U,CP210U, CP1000U, P78U, CP2000U

Sony
UP-D7000
UP-D8800

Toshiba
HC-1650

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Introducing something so advanced, so fast and so functional, we had to call it CommPlete.™ The new Multi-Tech CommPlete Communications Server is the single solution you've been asking for.

CommPlete versatility. Now you can combine dial-in/dial-out operation with digital channelized T1 and ISDN PRI WAN access in one system that connects up to 96 remote users per rack to ethernet IP or IPX networks. Based on Lucent Technologies Microelectronics Group K56flex chipset, this solution offers compatibility with a wide range of client modems.

CommPlete flexibility. Each of the four remote access servers can be independently configured using either our RASExpress, WindowsNT™ RAS or Novell® Netware Connect. Mix and match servers as needed for your operating environment.

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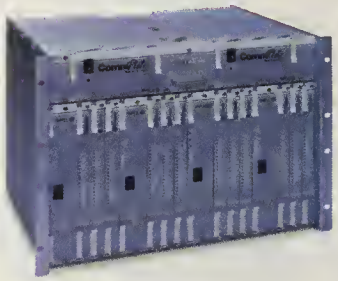

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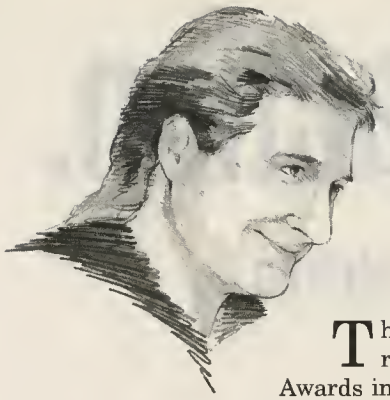


BABB'S BOOKMARKS by Chris Babb

...AND THE AWARD GOES TO...

Chris Babb is a Senior Systems Engineer for Control Masters, Inc., a Systems Integrator located in Downers Grove, IL, where he designs industrial automation software by day. He's a member of the Aquila BBS/Internet Team by night. Chris has worked with Aquila since 1990 and currently handles technical support, web design and construction, Internet training and various other online and offline duties. In his meager spare time, Chris enjoys music, playing bass guitar, the outdoors and his kitties. You can reach Chris at chris.babb@aquila.com

There is nothing like getting awards or recognition for something you've done. Awards instill pride in your accomplishments and a feeling that what you've done, regardless of what it was, was worth the time and effort you spent to do it.

With the advent of the Web and the enormous amount of information that it makes available to us, it was inevitable that there would be some process developed to inform us of the best stuff. Why? Well, maybe so that we wouldn't have to spend our valuable time stumbling around and looking through so much poop to find a pearl. Certainly, we have search engines to help us avoid that, but there is nothing like letting someone else do the dirty work of finding the good stuff for us and putting a page together that helps guide us to it. To prove that point, just take a look at the search engine pages (I'll be doing a re-review of them next month to show just how far they have come). You'll see that most of them have a section where much of the searching, sorting and categorization has been done for us.

Besides what the search engines are doing for us, we now have an incredible array of so-called "web page awards" just waiting to be plopped onto our sites like so many gruesome animal heads stuffed and mounted on a trophy room wall. The awards range from the mighty to the obscure and cover just about any type of web site that you can imagine. Pets, religion, naughty, nice, graphics, cool, awesome, weird, best, worst, top 1 percent, top 5 percent, top 10 percent, winners, losers, prettiest, ugliest, you name it and there is an award for it. Now, not every award really means something. Being selected as "Joe's Favorite Site of the Millennium" doesn't guarantee that anyone, except Joe, would actually like it. For that matter, if no one knows who the heck Joe is, I doubt that your site traffic would increase just because he liked it. On the other hand, being selected as a Starting Point Choice or the Cool Site Of The Day can almost guarantee that your web site is going to take a pounding, as so many people use these sites as a starting point when gearing up for a forehead scrunching evening of web antics.

I thought I'd take this month to talk a bit about some of the awards, since there are so many types that can increase traffic and add a flair of respectability. Another reason for mentioning these sites is that they offer a new set of lists of interesting sites to gawk at and a new set to steal ideas from (sorry, but it happens). Also, not one of these sites offers the exact same set of links, so you're always assured of a never-ending collection of previewed sites that are a gold mine of information, entertainment, and ideas.

Let's take a look at a bunch of the awards that you can earn. Good, bad or indifferent, these awards can get you on your way to more notoriety, more traffic and hopefully some more money-making opportunities.

COOL SITE OF THE DAY

www.coolsiteoftheday.com

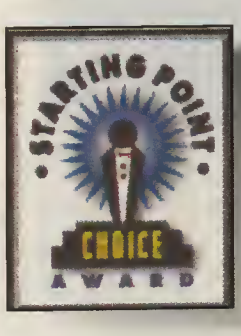
Specialty:
The Coolest Stuff!

I suppose you could say that the Cool Site Of The Day is the granddaddy of all cool site awards. I also suppose you could say that making the Cool Site Of The Day will be a true test of your web server's capability to serve up information without breaking. I've seen, and heard, many stories that getting this cursed award has caused web masters some serious grief. More than once, I have heard of someone asking *not* to be included in this list for that very reason.

Submission for the Cool Site Of The Day is done through e-mail. Cool Site states that it gets 400 to 600 submissions per day, and recommends that you describe the site you are submitting in only the most glowing of terms to get instant attention. Also, don't forget to give the URL of your site. Complete information on submitting your page and some hints on getting noticed are included on their site. A very cool site it is, too. In fact, there is a lot of cool information scattered throughout this site. This site is cool! It would be a cool idea to visit this site fairly often.

The Starting Point

www.stpt.com



Specialty: General

IMHO, the Starting Point is one of the better places to get started. Anyone can submit a useful page to the Starting Point. It is always looking for real value and content for its users. All submissions are added to the

"New Sites" section in one of 12 categories. As an added bonus, users can vote from among the sites listed to select a daily "Hot Site." The Starting Point offers much more than just a list of great sites to visit. You can also perform "Power Searches" across the Web, get weather forecasts, access maps, stock quotes, and sign up for advertising services. It makes a great starting point for your web travels.

WebCrawler Select
`http://webcrawler.com/select`

Specialty: General

As stated on this page, WebCrawler Select reviews what it considers to be "The Best Of The Net" for its users. All "Select" pages are available in 18 different categories that cover the bases of life in this day and age. Reviews of the pages selected are available along with links to the pages. Of course, there is much more to WebCrawler than just its selected sites, and I urge everyone to make this site a regular stop on the Web.

USA Today Hot Site
`www.usatoday.com/life/cyber/ch.htm`

Specialty: General

USA Today has always been one of those interesting newspapers that seems to break the mold in which the local rags are stuck. It's no different with its web site and with its Hot Site's of the Day. Winners are chosen solely on the basis of content and appearance. Basically, stretching the design envelope and using a little foresight will get you noticed here. Use this site for the current Hot Sites, past archives, and its extremely informative and entertaining news.

Net Ratings
`www.geocities.com/Area51/5963/ratings.html`

Specialty: General

A no-lose situation. Net Ratings allows you to submit your page to be rated by its staff. Within several days, you will be sent your Ratings symbol. You will also be linked to its Ratings pages and have the opportunity to be selected as the random page of the month. Links to all four- and five-star rated sites are also maintained from this page.

COOL Doctor
`http://cooldoctor.net`

Specialty: General

The *Computing OnLine Doctor* e-zine is a webzine that helps people learn more about computers, software, the Internet and the Web. Each month, 10 Cool Sites are chosen based on nominations, and through COOL Doctor's own web-surfing experiences. The criteria it uses is based on responsiveness, quality, content, relevance and audience. Uniqueness is given the edge over ordinary. Winners can be accessed from the COOL-LIST. Past winners are linked in the COOL-LIST archives as long as the Winners Award graphic is displayed on their sites. Each year, 10 winners are selected from the monthly lists to be promoted to a "Super Cool" list. According to the information presented here, this site is quite popular and can dramatically increase traffic to your site.

The Award Ward
`http://awardward.eyecandy.com`

Specialty: The Best and the Worst

"Insanity at it's finest!" My kind of site. This site gives recognition to the best and the worst of the Web. User submissions are reviewed and e-mail is sent if your site is accepted. Winners of the day are displayed at this site and are then moved into the archives. This is a fairly new award site, but its operators have been interviewed by various magazines and by the Emmy Awards. If you're like me and like the strange and weird, be sure to take a peek at this page fairly often and look at the huge archives!

Your WebScout
`www.webcom.com/webscout`

Specialty: Way-Cool Web Sites

Billed as the ultimate bookmark collection, Your WebScout offers 22 categories of links to some of the best and most popular web sites on the Net. Not to be outdone, this site also offers a wide range of other services including 22 web-related newsletters, free publicity, information on accepting credit card information on your site, and much more.

Cyber Teddy Online Guide Live!
`www.cyberteddy-online.com/teddy`

Specialty: General

Here's a list to beat all lists. Active since May 1995, this is the home of the original Awesome Universal WebSite 500, and the People's Choice WebSite 500. Basically, if you want an ever-changing, unending list of links judged by the people, for the people, then start here. Plus, the award logo is just so darn cute!

Homeschool Top 5 Percent Web Site
`http://homeschooling.miningco.com`

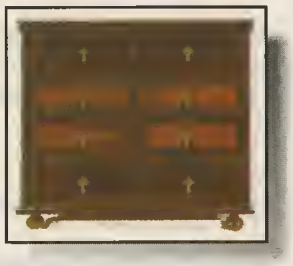
Specialty: Home-schooling

One of the specialty awards, this site focuses on the best in pages devoted to home-schooling. Award is by nomination and

is based on usefulness, appearance, navigation, and originality. Links to present and past winners are also available. If you're interested in home-schooling resources and the issues surrounding it, then check out this site.

These are but a few of probably 100 or so awards out there. As you can see, I didn't list all the top awards, all the intermediate awards, all the crappy awards, and definitely none of the naughty awards. Just a smattering of what's available. (I have to keep something in reserve for the future, don't I?) Always keep a sharp eye on the pages you are visiting for other awards. Most will be proudly displayed at the bottom of the main page, or, for those exceptional sites, on a separate page. As always, if I didn't list an award you are especially fond of, that absolutely has to be mentioned some time, then let me know and I'll keep it in reserve for a future column.

NUTSITE OF THE MONTH



Oh, a totally inoffensive site for this month! One that could appeal to everyone who has done their own laundry! Am I losing it? No, but I sure can associate myself with this one!

The Bureau Of Missing Socks
`www.jagat.com/joel/socks.html`

When I was traveling a lot, I got to the point where I began to buy clothing rather than find the time to do the laundry. Especially socks and undies. When I moved, none of my friends could believe the collection of socks I had accumulated. I was astounded that I actually had complete pairs. As time marched on, though, I've dwindled that amazing record down to almost a complete drawer that has nothing but sock singles. To help me determine the culprit, I consulted the Bureau Of Missing Socks.

This site is the first organization devoted to solving the mystery of what happens to all those socks! It offers theories, support, discussion, and even songs to help the most depressed sock-loser come to grips with this sneaky phenomenon. There is a whole world outside the sock drawer, people. This interesting site will help all of us put those losses behind us.

Personally, I really never bought into the occult theories behind sock disappearances. I'm convinced that if I beat the dryer hard enough with my shoe, it'll cough those puppies up. Besides, I'm too caught up wondering where all my freaking forks have gone.

You can always see my past columns at `www.boardwatch.com`. I'm always interested in reading what you have to say and am always willing to take a look at a site... any site you think is interesting, useful, or just downright strange. Let me know about them at `cbabb@aquila.com`. ◆

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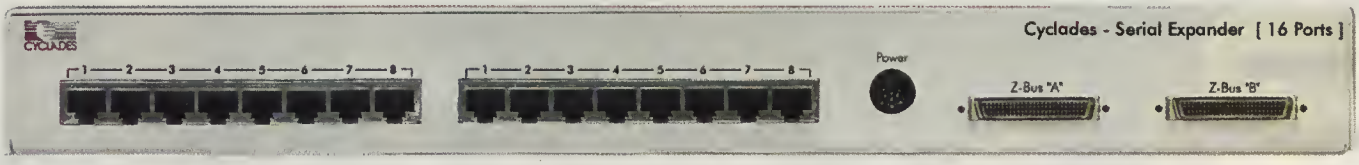

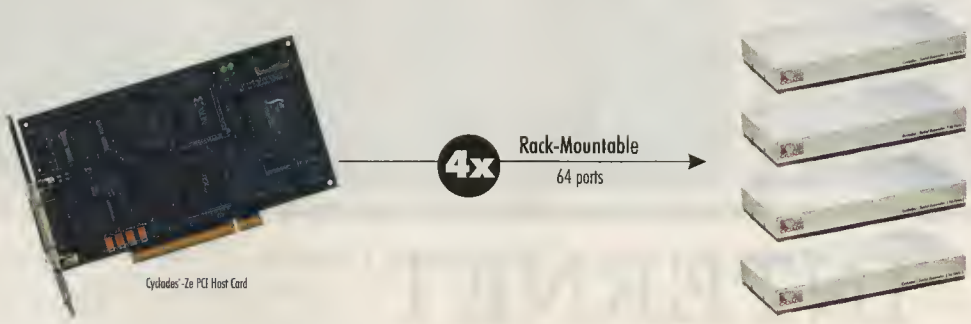

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Performance Features	*Cyclades®-Z*	*Other RISC/ASIC Based Intelligent Baards*	*Nan-Intelligent*
Pracessar	Full-blown 32-bit RISC processor (MIPS3000)	Small 8-bit RISC/ASIC Engine	None
FIFO Size	Defoult: 4 KBytes, configurable (1 MBytes DRAM on-board)	Ronges from a few bytes ta abaut 1 KBytes.	16 bytes for the 16550
Bus Interface/ Data Transfers	True 32-bit PCI Moster/Slove	8-bit ISA/8-bit PCI slave	8-bit ISA
Maximum naminal baud rate	960.8 kbps	Ronges from 115.2 - 460.4 kbps	up to 115.2 kbps

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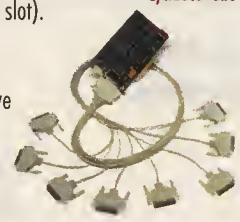

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INTERNET USE AND ITS UNCERTAIN FUTURE IN HONG KONG

by Vito Echevarría

By the time you read this article, Hong Kong should be under Chinese government control. That's right. As of July 1, 1997, rule over Hong Kong will be transferred from its former British colonizers to the communist Chinese government of Beijing. The resumption of Chinese control of Hong Kong is an issue that is a major concern for both Hong Kong residents and people around the world, who have helped make Hong Kong what it is today: a major Far East banking and trading center where exports range from apparel and watches, to electronics and toys. The Hong Kong stock market alone is a US$370 billion trade, and the city's merchandise trade is worth another US$367 billion.

Because of Hong Kong's commercial success, Internet use in Hong Kong by students and companies grew from under 30,000 in 1994 to an estimated 300,000 today (according to the International Telecommunication Union/ITU). That's more subscribers than Taiwan: 129,680; mainland China: 11,800, South Korea: 161,180; Singapore: 125,230; Malaysia: 23,070; Thailand: 22,300; Indonesia: 12,930; Philippines: 9,740; and Vietnam: 2,000. As a reflection of the Internet boom in this commercial enclave, there are currently 37 ISPs operating in Hong Kong. Given China's expected resumption of power over Hong Kong, will the Internet continue its success, or will it be censored, as it currently is in mainland China?

COMMERCIAL WEB SITES

Hong Kong Trade Development Council
(www.tdc.org.hk)

This web site was set up to promote Hong Kong's trade in goods and services, to help develop Hong Kong's role as an information hub, and to act as a gateway to mainland China. The Trade Development

Council (TDC) has a global network of 51 branch offices.

There are 24 sub-sections in this web site, perhaps the most relevant being the "Hong Kong Beyond 1997" section, which, among other things, provides details on what should remain unchanged under Chinese rule in July 1997 (information sorely needed to assure concerned international business people).

Legally known as a "Special Administration Region of China," Hong Kong is to remain a free port (with a free trade policy, open economy, low taxation, and independent finances). Hong Kong, according to this web site, will retain its separate customs territory status. Trade, including commerce with mainland China, will be governed by international trade law.

Hong Kong, says this web site, will also retain its legal system, laws based on common law, human rights and pre-existing rights and freedoms enjoyed under British rule. Freedom of speech, the right to own private property, etc. are to remain under Chinese rule. English will continue to be used as an official language along with Chinese.

Given the possibility that the incoming Chinese government may indeed change the way business is done in Hong Kong, there may be new information in certain subsections of this web site, like "Practical Tips for Doing Business with Hong Kong" (`www.tdc.org.hk/visitor`) and "Business Alert: Trade Policies and Measures" (`www.tdc.org.hk/alert`).

Among the interesting links that this web site features are those pertaining to Hong Kong trade shows, such as the Fashion Week Spring/Summer Show (`www.tdc.org.hk/fair/fashions.htm`), the Hardware Show (`www.tdc.org.hk/fair/hardware.htm`), the Electronics Fair (`www.tdc.org.hk/fair/electron.htm`), and the Watch and Clock Fair (`www.tdc.org.hk/fair/watch.htm`).

There are also industry-specific web sites relevant to American and other foreign traders, such as the Hong Kong Watch Manufacturers Association (`www.net-trade.com/nettrade/cust/hk-wma/home.htm`), which lists contact information for member firms, and details previous and upcoming meetings and seminars in the watch-making industry. There's also a similar web site for the Hong Kong Jewelry Manufacturers Association (`www.net-trade.com/nettrade/cust/hk-jma/home.htm`).

Then there's the KCL Hong Kong and China Business Directory (`http://k.com.hk/industry/industry.htm`), which has links to firms involved in, among other sectors, Hong Kong's toy, electronics, fashion, hardware and housewares, and watch and clock industries.

Another noteworthy Hong Kong web site is the Hong Kong Government Economic and Trade Office in San Francisco (`www.hongkong.org`), which keeps Net surfers up-to-date on Hong Kong's transition to Chinese rule. As a reminder that Hong Kong is more than just a major Asian commercial center, there are slide shows and Quick Time Virtual Reality presentations to show that there are numerous tourist sites as well.

Hong Kong Business Association
(`www.hkbiz.com/artbase/dev.html`)

This web site has a phone listing of various Hong Kong-based companies, such as the Hong Kong Association of Banks, the Hong Kong Watch Manufacturers Association, and the Hong Kong Exporters Association.

HONG KONG'S INTERNET SERVICE PROVIDERS

AT&T EASYLINK Services Hong Kong (`www.att.net.hk`)

Obviously, this is U.S. telecom giant AT&T's entry into the busy Hong Kong ISP market. However, it not only provides dial-up access for Net surfers, but also backbone services to Hong Kong ISPs (see this article's Backbone Providers section).

Initial set-up charge: free
Monthly fee:
HK$128 (US$18) for unlimited access.

Contact Info:
31/F Shell Tower, Times Square
1 Matheson Street
Hong Kong

Tel.: (852) 2511-5828
Fax: (852) 2598-0810
E-Mail: elsaphelp@attmail.com

Asia Online
(`www.asiaonline.net.hk/isp97`)

Asia Online is one of Hong Kong's leading ISPs, with direct links with other Asian countries and international backbones. Asia Online already has offices in the United States, Taiwan, the Philippines, and China itself — with dial-up operations at Taiwan and China. Asia Online is also working to help other Far East ISPs expand their businesses.

Among the advantages of Asia Online: two T-1s to HKIX (Hong Kong Internet Exchange peering point); two T-1s to the United States; 64 Kbps link to Australia; switched 100 Mbps Fast Ethernet network backbone; free Internet training; free installation software; 24-hour customer service and technical support; and even free copies of *The Dataphile* (Asia's first Internet magazine).

Web design, ISDN and leased-line service are also available from Asia Online. It supports 56 Kbps modems and offers a roaming service that covers the United States, Australia, Brazil, Canada, China, Finland, France, Germany, Guam, Indonesia, Japan, Korea, Malaysia, U.S. Marshall Islands, Mexico, New Zealand, Philippines, Puerto Rico, Singapore, South Africa, Spain, Switzerland, Taiwan, Thailand, U.K., and Venezuela.

	SETUP		MONTHLY	
Dial-up Service	HK$88	US$11.43	HK$108	US$14.03

Contact information:
23/F, Citicorp Centre
18 Whitfield Road
Causeway Bay, Hong Kong

Tel.: (852) 2111-3333
E-Mail: info@asiaonline.net

The firm's sister company, Asia Tech, is responsible for publishing *The Dataphile*, which has a circulation of 30,000 and a readership of over 100,000 throughout Asia. It also produces the "The Dataphile On Air" radio program, a weekly hour-long technology talk show aired on Hong Kong's Metro Plus and rebroadcast over the Internet via Real Audio. Asia Online's newest venture is a weekly TV show called "Dot.Com" — broadcast throughout Asia on the ABN Network.

Asia Net (H.K.) (www.asianet.net.hk)

Asia Net was formed in conjunction with the City University of Hong Kong (www.cityu.edu.hk), Acer Inc. (www.acer.com), ATM Communications Corp., Dyna Lab Inc. (www.dynalab.com.tw) and other strategic partners. This firm wants to make it easier for Asians to use the Net in Chinese, Japanese, and English.

Like most conventional ISPs, Asia Net offers the following services: e-mail; web access; FTP; and web page design. Due to its connection with City University of Hong Kong, Asia Net runs its own network operations center (NOC), which assures reliable high-speed connections. Users of Asia Net will soon have the added benefit of access through affiliated access points throughout Asia. Asia Net is currently planning to increase its coverage in the Far East and globally via affiliated access points. For now, though, Asia Net's expansion plans include Taiwan, Japan, and Singapore.

	SETUP		MONTHLY	
DIAL-UP SERVICE	HK$80	US$10.39	HK$108	US$14.03

Contact information:

602 A-8, Hong Kong Industrial Technology Centre
72 Tat Chee Avenue
Kowloon, Hong Kong

Tel.: (852) 2779-9877
Fax: (852) 2779-3367
E-Mail: info@asianet.net.hk

HK Net (www.hknet.com)

Boasting 25,000 subscribers, HK Net is the fourth largest ISP in the Hong Kong Internet market, making available a total bandwidth of over 3 Mbps and over 1,000 dial-up ports for its customers.

		MONTHLY
Unlimited Access Dial-up Service	HK$10.665	US$13.85

Contact information:
HK Net
Room 301-304, New T&T Centre
Harbour City, Tsimshatsui, Hong Kong

Tel.: (852) 2110-3388
Fax: (852) 2110-0088
E-Mail: mok@hknet.com (Charles Mok/General Manager)

Internet Online Hong Kong Ltd. (www.iohk.com)

IOHK, established in 1994, is one of Hong Kong's first ISPs, and highlights its connections to both the Internet in the U.S., as well as local connections (256 Kbps link to the U.S.; 512 Kbps link to HKIX/Hong Kong Internet Exchange). IOHK offers the iPass international roaming service, which operates with over 1,000 access points and provides service in over 150 countries. Subscribers are also offered 5 MB disk storage, 1 MB e-mail storage, and 1 MB web storage for personal home pages.

	DEPOSIT		MONTHLY(80 hours)	
DIAL-UP SERVICE	HK$300	US$38.96	HK$240	US$31.17
ADDITIONAL HOURS			HK$4.50	US$0.88

Contact information:
Rm. 1105 Austin Tower, 22-26 Austin Avenue
Tsimshatsui, Kowloon,
HONG KONG

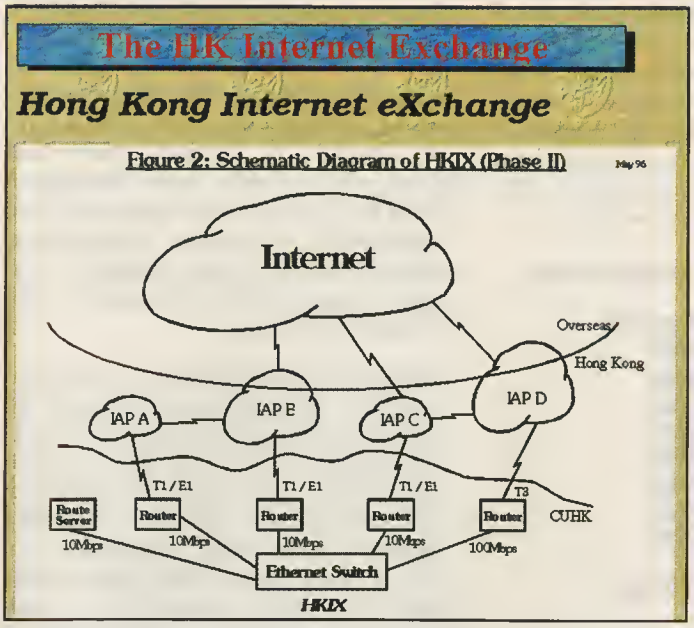
Tel.: (852) 2376 2371
Fax: (852) 2375-1333
E-Mail: info@iohk.com

BACKBONE PROVIDERS

Hong Kong Internet Exchange/HKIX (www.cuhk.hk/hkix)

HKIX is a cooperative project begun, coordinated, and operated by Computer Services Centre/Information Technology Service Unit (www.cuhk.hk/csc). HKIX's goal is to interconnect the ISPs in Hong Kong so that intra-Hong Kong traffic can be exchanged locally without having to be routed through the U.S.

Many Hong Kong ISPs have their own links to the U.S. ISPs must interconnect locally to have faster and less expensive



access to local sites. Most Hong Kong ISPs are connected to HKIX, as well as global ISPs like AT&T, IBM Global Network, and Global SprintLink. HKIX's expenses are paid for by CUHK, thus Hong Kong's ISPs need not pay to use its connections.

Hong Kong Telecom CSL (www.hkt.net)

Hong Kong Telecom CSL is one of Hong Kong's leading telephone companies. Its backbone service includes an 8 Mbps connection to the American Internet backbone (expanding to 10 Mbps soon), along with a T-1 (1.544 Mbps) and T-3 (45 Mbps) direct connections to HKIX. The company also has links to Australia, Japan, Korea, Macau, the Philippines, Singapore, Taiwan, the Maldives, Seychelles, Solomon Islands, and the South Pacific islands of Fiji, Vanuatu, and Tonga. Hong Kong Telecom also plans to set up links to the U.K., Russia, China, Malaysia, Indonesia, India, and Vietnam.

Hong Kong Telecom gets its U.S. connection through the Cable & Wireless Internet Exchange (CWIX), which plans to become the first global Internet backbone in existence. CWIX maintains a 100 Mbps and T-3 links to major interconnection points including: MAE East; MAE West; Pac Bell San Francisco NAP; CIX; and Sprint New York NAP. CWIX also has T-1 links to DLA Milnet, Navy Milnet, NE TAXS, MCI, and Sprint.

Hong Kong Telecom's backbone service, called Netplus, is one of the largest backbone services in Hong Kong and offers connections from 64 Kbps to 1.544 Mbps. The majority of Hong Kong's ISPs use this backbone as a link to international backbone networks.

Hong Kong Telecom plans to make its backbone the primary hub for Internet activity in the region, along with putting to motion plans to install a 45 Mbps link to the United States.

SPEED	SETUP		MONTHLY	
64 Kbps	HK$ 5,600	US$ 727.27	HK$ 7,600	US$ 987.01
128 Kbps	6,800	883.12	14,100	1,831.17
256 Kbps	9,600	1,246.75	30,000	3,896.10
512 Kbps	9,600	1,246.75	58,000	7,532.47
1544 Kbps	11,900	1,545.45	75,000	9,740.26

For more information, contact Hong Kong Telecom CSL at:

Tel.: (852) 2888-3311
E-Mail: webmaster@hkt.net

Hong Kong Supernet Ltd (www.hk.super.net)

Founded in 1993 by the Hong Kong University of Science and Technology Research and Development Corporation as an ISP, Hong Kong Supernet (HKS) has converted itself into a backbone operator.

As a member of Pacific Internet International, Hong Kong Supernet and its network consists of one 768 Kbps trans-Pacific international private leased circuit (IPLC) connecting to the U.S. Internet backbone and another IPLC (2.048 Mbps E-1) circuit to the U.S. via Japan. HKS also maintains two T-1 connections to HKIX for intra-Hong Kong Internet traffic.

HKS is also a participant of the Asian backbone, the A-Bone, joining forces with two leading Asian ISPs: Internet Initiative Japan/IIJ, and Pacific Internet of Singapore.

Contact information:
Hong Kong Supernet Ltd.
Unit 73, 5/F
Hong Kong International Trade and Exhibition Centre
1 Trademart Drive
Kowloon Bay, Kowloon
Hong Kong

Tel.: (852) 2335-3600
Fax: (852) 2719 8469
E-Mail: info@hk.super.net

AT&T Easylink Services Hong Kong/Backbone Services (www.att.net.hk)

In addition to consumer Internet connections, AT&T in Hong Kong provides backbone services to Hong Kong ISPs, with connections to international backbone networks from 64 Kbps to 1.544 Mbps speeds.

AT&T Hong Kong, though, is deliberately vague on other details of its backbone operations, saying only that pricing is for customers only and it depends on the level of usage.

The A-Bone (www.abone.net)

Acting as the Internet hub for the Far East, the A-Bone (formed by AIH/Asia Internet Holding Co., Ltd.) has set up Internet lines among eight countries in the Asia-Pacific region, including Hong Kong, Japan, and Singapore. This year, AIH plans to expand the A-Bone network by linking with six more countries (shown below), while gradually raising the capacity of the existing links to 45 Mbps and redesigning the network's topology. Currently, linkage with the non-Asian regions of the Internet is provided via A-Bone member ISP facilities, such as a 135 Mbps connection to the U.S., which will be upgraded to 245 Mbps by Internet Initiative Japan.

Current Network Configurations

Japan:	100 Mbps FDDI
Hong Kong:	3 Mbps
Singapore:	6 Mbps
Korea:	1.5 Mbps
Taiwan:	1.5 Mbps
Indonesia:	2 Mbps
Malaysia:	2 Mbps
Thailand:	2 Mbps
United States:	135 Mbps

Network Expansion Plans (for this year)

China:	1.544 Mbps or above
India:	1.544 Mbps or above
Vietnam:	1.544 Mbps or above
Philippines:	1.544 Mbps or above
Australia:	2 Mbps
Europe:	2 Mbps or above

THE FUTURE OF THE INTERNET IN HONG KONG

A number of Hong Kong business people, in particular, have assured foreigners involved in business there that China will not make major changes in Hong Kong and its more politically and economically permissive environment, and with respect to the Internet, no dramatic changes will be imposed by the Chinese authorities.

Interestingly enough, though, the definition of a permissive environment for purposes of the Internet was already circumscribed by the Hong Kong government (which, according to press reports, has carried out acts of censorship against web sites that it objected to). In March 1995, Hong Kong Police raided local active ISPs, supposedly to crack down on hackers. These ISPs had their PC equipment and records confiscated and were shut down for a week. Apparently, the ISPs who fell victim to that raid objected to a new surcharge on Internet use. This, in a society with its own Bill of Rights in force.

With China taking control of Hong Kong, part of Hong Kong's Bill of Rights will be invalidated (or "deleted" if that terminology is more catchy). Announcements have already been made that a number of other laws, particularly laws providing for civil liberties, will no longer exist as of this July. No doubt, the Internet in Hong Kong will, in some way, be restricted, which can impact negatively on banks, stock brokerage houses, and other firms who are accustomed to and depend on a free flow of information (something that's toxic to the Chinese authorities).

According to Charles Mok, general manager of Hong Kong ISP HK Net, self-censorship will be the order of the day for Hong Kong ISPs and other Hong Kong entities that use the Internet: "In the short term, nothing will happen. The Telecommunications Ordinance will remain the same. Hong Kong will operate under a 'one country, two systems' basis as a Special Administrative Region within China. This is, or course, not to say that there will not be more influence from the north [Beijing authorities]. But it is for Hong Kong people to map out our own future. In terms of content control, the government has also expressed that it is willing to allow the [ISP] industry to come up with a code of practice and enforce itself, rather than for it to come in as a censor."

Mok and others have noted elsewhere that the Chinese government would have to dedicate a lot of manpower to try to use, for example, the Proxy server approach to censor web sites — where offensive web sites would be weeded out, and news would be filtered. Licensing of ISPs, used successfully in mainland China, may be used in Hong Kong. If the current number of Hong Kong ISPs shrink, due to mergers and other factors, then the Chinese government will be better able to keep tabs on the Internet in Hong Kong.

Will such anti-Internet actions by the Chinese government kill the goose that lays the golden egg? At least some foreign businesses feel that only if privacy is sufficiently encroached upon by the Chinese, will there be a real possibility of such businesses transferring their Asian operations in other locales, like Singapore or Malaysia. But only in extreme situations.

In the last five years, many U.S. firms have relocated to Hong Kong with hopes of capitalizing on access to growing opportunities in mainland China and Southeast Asia. It's not likely that they will walk away from Hong Kong, even if they have to grapple with restrictions on the Internet.◆

LINUX REDUX

by Alan Cox

NETWORK MANAGEMENT AND MONITORING

Alan Cox is the Technical Director of CymruNet, a leading Internet service provider in Wales, United Kingdom. Cox is also a member of the Linux International Technical Board and the CERT Vendor contact for Linux. He maintains the ***http://www.uk.linux.org*** *web page and leads the Linux Networking Project, the project to port UNIX to shared memory multiprocessor architectures, and a project to port Linux to 8086 embedded controller systems. Send e-mail to* ***alan@cymru.net***

Network administrators tend to accumulate piles of "essential" tools for their operating systems as part of the ongoing battle against software, users, equipment faults and just plain unfair happenings that make life interesting.

The most important diagnostic tool is found on the owner's shoulders, but it does need to be able to collect and collate information to work. The most basic management tools simply collect data.

The most common method used for collecting remote network status information is SNMP — the Simple Network Management Protocol. CMU produces a set of tools called (logically enough) *cmu-snmp*. This provides libraries, a command-line querying tool, and a daemon that allows Linux and UNIX boxes to be monitored and to be used as monitoring stations. The CMU daemon is very commonly used on UNIX systems but the client does not have a great user interface.

TKINED

Scotty is a TCL/TK extension that allows you to write Tcl applications that speak SNMP. This is a great way to build custom monitoring applications with graphical interfaces. Scotty is used in the Tkined application. This allows you to monitor network status via SNMP and other means, such as ping. Tkined can also display graphs of the load placed on machines and network bandwidth.

Tkined is surprisingly easy to use and does not require a great deal of network know how and configuration. You can knock up displays and monitoring setups in Tkined extremely rapidly and expect them to work usefully from the start. It certainly isn't the equivalent of tools like HP Openview, but it is definitely capable of handling most day-to-day network administration jobs without taking a lot of training and consulting to set it up.

BIG BROTHER

Big brother takes a slightly different approach from other packages by including high level monitoring as well as basic monitors. Given a configuration file, it creates status pages showing the state of the host's disk, memory, CPU usage and networking. Unlike the other tools, it can monitor web sites by requesting pages. Thus, a crashed web server on an otherwise fine machine will be noticed by this tool.

Big brother is mostly built from shell scripts, so it's easy to tailor for your own specialist applications. It also has some basic paging facilities that are useful for 24x7 monitoring of a network.

TCPDUMP

TCPdump is the *de facto* standard UNIX network dumping tool. It decodes and displays IP and some other forms of traffic on network interfaces. The program supports filter rules so you can avoid dumping all traffic and chase only those which you need to investigate. TCPdump can sometimes appear to not be producing output. Starting TCPdump with the -n option prevents it from doing name lookups, which if your network is down takes ages and will fail anyway.

TCPdump makes a good basic sniffing tool. Its output can be fed into scripts for further analysis. Some security monitors use TCPdump to look for suspicious connection patterns. However, this is quite CPU intensive, and fairly impractical on high-speed networks.

IP ACCOUNTING

You can use Linux to collect its own usage statistics with the IP accounting included in the kernel. The ipfwadm tool allows you to add firewall rules that count packets rather than dropping them. For example, the command:

```
ipfwadm -A -a -S 0/0 -D my.host 25 -b
```

will count packets to and from your mail port. Man ipfwadm covers the many facilities of accounting and firewalling. When you are using Linux as the router, you can also use this facility to log packets passing through. This can be used for collecting statistics on entire networks. For example:

```
ipfwadm -A -a -S 0/0 -D 12.34.56/24 -b
```

appends (-a) an accounting (-A) entry for packets from any source (-S) to the destination (-D) /24 12.34.56. We also log packets the other way using a bi-directional (-b) rule. The accounting code can match packets by ports, protocol (-p tcp, -p udp) and interface (-W name), which should let you monitor most types of traffic.

You can view the current figures using

```
ipfwadm -A -l
```

which lists the entries. You can add -z to clear the counters as they are read. I hope to cover the basics of setting up a Linux firewall next month.

LINUX AND LAPTOPS

My latest toy is an IBM PC110 — a 486SL33 laptop weighing about 700 grams, and the size of a small paperback book. Installing Linux on the machine introduced me to some of the fascinating things laptops do to annoy software installers. To start, it has neither a CD-ROM drive nor network connection. A friend had installed his PC110 by putting Linux onto a parallel Zip drive using another machine (`http://swan.ml.org/pc110`). I decided to try the install via PLIP that is now featured in Red Hat 4.2. For the non-Linux users, PLIP is a parallel port protocol that allows you to tie a pair of machines together by parallel port as if they were connected by Ethernet. DOS packet drivers for PLIP also exist and can be found at `www.crynwr.com`.

The install went very well until the final stages. The ability of the PC110 to boot off the third IDE drive (hdc), where it maps the PCMCIA drive, confused LILO (the Linux boot loader) somewhat. Changing the PC110 BIOS configuration to boot from the internal flash disk rectified this.

On the whole, I was pleased at how well the setup went. The install of Red Hat included PCMCIA, as do all the major Linux distributions. The APM setup worked right from the start. Dave Hinds maintains an excellent Linux PCMCIA how-to, which is one of the many resources that can be found on the Linux laptop home page. Having doubled the battery life of the PC110 with them, I recommend people read the power saving hints.

However, trying to install Applix was fairly unsuccessful. Applix 4.2 simply has no concept of a "small" install. It wants about 150 MB, which on a 340 MB disk is simply too much. Star Office lets you pick modules to install and seems a better choice for laptop systems, as does a minimal WordPerfect install.

The end result is quite neat, although the display is a little small for xdoom. Serious software works well. I now have a machine that I can take anywhere but has enough power to run SNMP monitoring tools, TCPdump, secure shell and the rest of a network administrators armory of desktop tools.

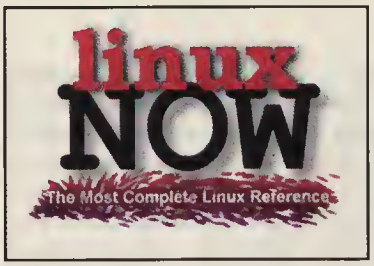
A typical laptop always struck me as too bulky and inconvenient. The PC110 is a great answer. I've since written a driver for the PC110 digitizer pad and have a couple of PC110 DOS utilities to add Linux equivalents. Having the documents in Japanese makes it a little more interesting at times, however.

NEW PRODUCTS

Caldera (www.caldera.com) finally released its Caldera OpenLinux Standard, a bundle including the Netscape web server and Star Office. The price seems quite steep at first glance, but the package includes a great deal of commercial software — if you need it.

Red Hat (www.redhat.com) released Red Hat 4.2, which can be used both as an upgrade to earlier releases or a new install. SuSE, who has long been known for its German language CDs, has moved into the English market and opened a U.S. office and English language web site (www.suse.com).

If you've had the urge to play with databases on Linux, then try a demo/personal use version of SOLID server for Linux. Databases are becoming quite a Linux strong point, although Oracle and Ingres are noticeably absent big players.



Finally the OSF group working on the mach-based Linux, released their first snapshot of mkLinux/HPPA to the world. (www.gr.osf.org)

WEB SITE OF THE MONTH

I've been making a pick of the week for a while on www.uk.linux.org, and occasionally some real gems appear. A couple who deserve worthy mention as well as being great places for general information on Linux and for Linux kernel information are Linux NOW! (www.linuxnow.com) and LinuxHQ (you guessed it: www.linuxhq.com). If you are the type who follows all the latest kernel development, then go to LinuxHQ, which contain a tons of valuable resources. Those using production kernels may well find the "unofficial" patches to 2.0 sometimes useful, notably the patches for speeding up news servers and those for more file descriptors per process.

Until next month, by which time I hope I can report on the progress of Linux for the 680x0 based Macintosh machines. ◆

Net Profits.

BEST OF SHOW 97

Cast your net wider to thousands of small businesses with our WebRamp M3.

Practical shared Internet access for small offices.

The small business opportunity for ISPs is miles wide and fathoms deep. But most small offices have only one Internet account, with users standing in line to get their e-mail. WebRamp M3 is the "perfect solution," according to CNET. Now you can give your small business modem customers the simplicity of dial-up lines with the speed of digital transmission.

Uses standard 14.4-56K modems.

WebRamp M3 combines true analog routing with a built-in Ethernet hub. Unlike a modem pool, multiple users have simultaneous access to the Internet, even with just one modem.

For better performance, your customers can use up to three external modems (including either 56K type). Then, they'll cruise the Web at a pleasing clip, up to triple 56K speed. And WebRamp M3 uses standard modems that you already support, so you don't have to change settings or buy new equipment.

Catch of the day.

With WebRamp M3 you'll be able to catch new customers by the thousands. That's because each modem will need an Internet account plus additional e-mail accounts and web hosting.

Here's a special offer to lure you to make the first purchase. At just $249.00*, you can hook the M3 from WebRamp and net real savings. Call us today at **1.888.4WEBRAMP** or visit us at **www.rampnet.com/cast.html**. We'll tell you more about our entire family of WebRamp products including our award-winning ISDN routers.

* Plus applicable taxes and shipping. Limit: One per ISP at $249. Regular price is $439.

3180 De la Cruz Blvd., Suite 200 Santa Clara, CA 95054 Tel: 408.988.5353 Fax: 408.988.6363 http://www.rampnet.com e-mail: sales@rampnet.com

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Your the Web at nearly TWICE the SPEED

They're out there. All over the planet.

Forty-eight million computers. All waiting to be fed by the Internet.

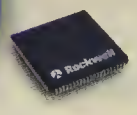
Ravenous computers, united by an insatiable appetite for the ultra-rich graphics, sound and information served up 24 hours a day, 365 days a year, on the Web.

And only you can satisfy them. By offering your subscribers Rockwell K56flex compatibility. Rockwell K56flex not only lets modems download at nearly twice the speed* of conventional ones, it's also the technology of choice for nine out of the top 10 modem manufacturers worldwide.

And more than 90% of the leading Internet access server manufacturers. As well as over a thousand of your fellow Internet Service Providers.

Including some of the biggest names on the Net. America Online. CompuServe. Prodigy Internet. EarthLink Network. Just to name a few. (You'll find a complete list when you visit www.techweb.com/speed).

Rockwell K56flex™ is here. Backed by the commitment of more than 1000 Internet Service Providers with over 20 million subscribers. And you can join them. By satisfying your subscribers' appetites for the most widely supported 56K technology.



With millions of subscribers worldwide who'll soon have the ability to connect to the Web using Rockwell's K56flex technology.

Which should actually come as no big surprise. After all, Rockwell already provides more than 70% of the world's Internet and corporate connections.

K56flex momentum is building. And it's getting stronger every day.

Match that with 48 million computers starving for faster access to the Net, and you've got an opportunity of enormous proportion.

It's really very simple. Just give your subscribers a healthy helping of Rockwell K56flex technology.

And help them avoid the indigestion that a wrong choice inevitably brings.

Bon Appétit.

Rockwell

www.nb.rockwell.com/K56flex

**Actual speeds vary depending on line conditions. Due to FCC limitations, speeds in the U.S. are less than 56 Kbps.*

CONSUMMATE WINSOCK APPS

by Forrest Stroud

THE BATTLE OF THE BROWSERS ...NEXT MONTH?

Well, we were hoping to take a look at Internet Explorer 4.0 this month, but as of the time this issue went to press, a version more stable than the current Platform Preview release had not yet been released. Next month, assuming we can get our hands on a new beta release of IE 4.0, we will check out Microsoft's answer to Communicator and see how the two stack up. Expect to see the newest component of Netscape Communicator, the push-based Netcaster, featured as well. But, for now, check out what we have to offer this month, including the long-awaited debut of The PointCast Network for Windows 95 and NT.

The applications reviewed here, and many more, are available on Stroud's Consummate Winsock Apps List, `www.stroud.com` and `cws.iworld.com`.

Forrest H. Stroud is a recent graduate of The University of Texas at Austin. The Information Systems and Data Communications Management major is currently working in College Station, Texas as a web developer for Mecklermedia Corporation. Stroud can be reached at `neuroses@tcac.com`.

The PointCast Network v2.0

Desc:	An amazing 32-bit application that delivers critical news to your desktop for free
Pros:	Tons of features, easy customization, impressive design and excellent interface, free news feeds
Cons:	Could benefit from a speed infusion, lacks the ability to automatically delete old articles
Location:	**ftp://207.88.210.24/pub**
Filename	**pcn32???.exe**
Status:	Freeware
Company:	PointCast, Inc.
http:	**www.pointcast.com**

The **PointCast Network** (PCN) exemplifies all that is good and bad on the Internet. The good — PCN delivers free, to your desktop, timely and relevant information in the form of stock updates, sports scores, weather forecasts, news feeds, industry analyses, and more. PCN offers a variety of customizable options and allows you to personalize it within a framework of general categories including sports, stocks, business/industry, general and political news, weather, lifestyle (including entertainment, horoscope, and lottery news), the Internet, national and regional news, and international news. In addition to these general categories, PCN delivers feeds from specific news sources like CNN Interactive, ZDNet, Wired, CMP Techweb, and a wide variety of regional newspapers (*L.A. Times*, *Chicago Tribune*, *Seattle Times*, and *Philadelphia Online* for example). PCN also includes a scheduling agent and configuration manager for personalizing the service to your needs. An extremely cool screen saver is another one of PointCast's strong points — the screen saver rotates between all of the above features so that you can get the latest scores, news clippings, and stock quotes without even touching your keyboard. With the latest release, v2.0, PCN sports the new SmartTicker, a customizable ticker bar that occupies a minimal amount of desktop real estate while still delivering critical headlines. The PCN interface has been developed from the ground up to be efficient and intuitive for all users, from novice to Net-adept. An iconic hand allows you to change the direction and speed of the SmartTicker, as well as to quickly find information on the normal SmartScreen. Clicking on news clippings gives you a full-screen view of the report, saving needless keystrokes in the process. PCN offers more important news than you'll find in your daily newspaper, and does so with an interface that is easier and also more enjoyable to use. Even better, PCN now includes an inline version of Microsoft Internet Explorer. Seamless integration with Netscape Navigator, as well as the ability to function as a Netscape plug-in module, are also offered by the client.

So if all this is the good news, what could be the bad news? PCN has one negative aspect that parallels the Net with amazing similarities — both are adept at sucking up your time. Hours can easily be whittled away with PCN, but unlike the Internet, PointCast offers several features designed to help maximize the information available to you with a minimal loss of time. Nearly every news feed category has a summary report which briefly lists all the clippings currently available. This allows you to quickly find important articles, jump to the relevant ones, and then move on. Still, it would be even more efficient if each summary header included a hypertext link to the relevant article. PCN could also be made faster by allowing you to easily delete outdated articles or by having an agent that automatically removes old articles based on your preferences. As with the Net itself, PCN can be dreadfully slow for those with slow connections. PCN attempts to resolve this problem by storing static information (like advertisements) on your hard drive. PCN has been available for the past year as a 16-bit release; only recently have 32-bit Windows 95, NT, and Macintosh PowerPC versions been released. The 32-bit version is a beta release of the new 2.0 version of PointCast that features a completely redesigned interface, more channels, the impressive SmartTicker, an automatic uninstall utility (finally), an integrated version of Internet Explorer, and several new beta services. While PointCast may not be the consummate application, it is definitely one of the best Net apps released yet.

The **Microsoft Dial-up Networking** (DUN) utility is perhaps the single most important application included with Windows 95. Other than Trumpet

Microsoft DUN Upgrade v1.2

Desc:	An important upgrade for the standard Win 95 Dial-up Networking (DUN) client
Pros:	Handles every aspect of getting on and off the Internet, feature-replete and easy to use
Cons:	Lacks some of the advanced features of RAS+, some bugs still exist in the beta release
Location:	**http://www.microsoft.com/ntserver/info/PPTPdownload1.htm**
Status:	Free upgrade for users of Windows 95
Company:	Microsoft Corporation
http:	**www.microsoft.com/msdownload**

Winsock and a few proprietary IP winsock clients, how else are you going to connect to the Net? Yet, despite having numerous advantages over the competition, the standard 1.0 version of MS DUN is, by no means, perfect. RAS+ 95 is one client that attempts to capitalize on MS DUN's deficiencies, but does so only by adding an extra layer to the DUN client and by using its own interface. Many users would prefer to use the standard MS DUN interface, but also want more features than the standard client offers. Thankfully, Microsoft has responded to the demands of its users by releasing an important upgrade to the DUN, version 1.2. Now in beta release, the DUN upgrade provides a number of additional features including those found in the ISDN Accelerator Pack (actually version 1.1 of the MS DUN). These include support for internal ISDN adapters, multilink support for dual ISDN channels, connection-time scripting for automating, non-standard login connections, and several bug fixes to Dial-up networking components and to the TCP/IP winsock stack. In fact, all the networking features and fixes included in the OSR2 OEM release of Windows 95 can be found in the new MS DUN release.

The latest release of the DUN also offers a new traybar connection icon (meaning that the DUN no longer takes up space on the menu bar), built-in scripting (you no longer need to use the companion DUN scripting tool), and an option to bypass the infamous "Connect To" screen. The bypass option will allow you to immediately connect to the Net after double clicking on the DUN icon, whereas before you had to first click through an intermediate (and often unnecessary) step. Perhaps its most ambitious new feature, the new release also delivers Point to Point Tunneling Protocol (PPTP) client capability for Windows 95. The PPTP client allows a Windows 95 computer to establish a secure connection across the Internet to a private network, creating a virtual private network (VPN). PPTP adds the ability to treat the Internet as point-to-point Dial-up Networking connection. One use for PPTP is to use a tunnel server to allow selected users to access a private network that is separate from the general corporate LAN. All data sent over a PPTP connection can be encrypted and compressed, and multiple network level protocols (TCP/IP, NetBEUI, IPX) can be run concurrently. For more information on the Point to Point Tunneling Protocol, check out Microsoft's PPTP FAQ (`www.microsoft.com/ntserver/info/DUNFaq.htm`). Overall, the Microsoft DUN upgrade is a must-have update for those who have been using earlier versions of the client as well as for anyone who is looking for a quick and efficient means for connecting to the Net. Simply said, MS DUN delivers.

Calypso Mail is the latest commercial e-mail client to go head to head with the likes of Eudora Pro, Pegasus Mail, Netscape Messenger, and Internet Explorer's Outlook Express. Calypso offers a quite impressive feature set coupled with a graphically appealing interface. Considering the fact that it is a relatively new program, Calypso's future looks bright indeed. Calypso's current area of excellence is its support for multiple mail accounts. Managing more than one account has never been easier, thanks to features like secure multi-user operation with password control, multiple mailboxes (for sorting incoming and outgoing mail), mail filters, auto-response capabilities, and excellent usability design. Another area that helps set Calypso apart from the competition is its address book capabilities. In addition to the normal capabilities, Calypso offers two additional address book options — Bulk Mail and Mail Templates. Bulk Mail allows you to easily send the same message to a group of people at the same time. The Mail Template option assists you when sending out routine mailings by utilizing user-configurable templates. Additional cool features include an integrated spelling checker, IMAP4 support (a feature shared by only a few other mail clients, including Netscape Messenger), a three-pane viewing window (similar to Outlook Express), extensive mail filtering options (although not as advanced as Pegasus Mail's), support for multiple signatures, incoming message notification alerts, multiple message sorting options, efficient attachment capabilities, and more.

Calypso Mail

Desc:	A relatively new and already nearly superb commercial e-mail client
Pros:	Great interface and usability features, excellent support for multiple mail accounts, solid feature set
Cons:	Lacks some of the more advanced features found in clients like Pegasus Mail, relatively expensive
Location:	**ftp://ftp.mcsdallas.com/pub/calypso**
Filename:	**calypso.exe**
Status:	Free 30 day evaluation. Commercialware - $59.95
Company:	Micro Computer Systems, Inc.
http:	**www.mcsdallas.com/mcs/calypso**

While Calypso does have auto-responder capabilities, the client is set up so that you can only send the same response to all messages received for your account. While this works just fine in many cases, it is not as flexible as the auto-response capabilities found in Pegasus Mail and Transoft Mail, both of which allow you to restrict automatic responses to only be sent out when specific conditions are met. Calypso users will enjoy its multi-threading capabilities, a feature that gives the client an advantage over apps like Eudora Pro, which tend to be slower as a result of their less advanced designs. At just under $60, Calypso competes well with the commercial clients in its category (Eudora Pro, Transoft Mail Control, and Pronto 97), but it doesn't fare as well against less expensive clients like Pegasus Mail, Netscape Messenger, and Outlook Express. Calypso does offer a Lite version, which kicks in after the thirty day evaluation has expired, but this version is a severely crippled client when compared to the standard release. Calypso Lite restricts you to one mail box, one e-mail account, one signature, no IMAP4 support, no mail filters, no address

templates, no Bulk Mail, no spell check, and no auto-response capabilities. The thought of using Calypso Lite on a regular basis should be enough of an incentive to fork over that registration fee well before the expiration date arrives. Overall, Calypso Mail is a near-superb client that will only get better with time. Still, if you're a user with multiple accounts, the current version of Calypso Mail will more than likely meet all of your needs without leaving you wanting for more.

HTML Assistant Pro97

Desc:	The Windows 95/NT debut of one of the Net's earliest HTML editors
Pros:	Solid collection of features, HTML Assistants guide you through implementing complex web elements
Cons:	Unattractive, counterintuitive, non-appealing interface can make HTML Assistant a real drag to use
Location:	**www.brooknorth.com/brooknorth/pro97demo.exe**
Status:	Free 30 day evaluation. Commercialware - **$89.95**
Company:	Brooklyn North Software Works
http:	**www.brooknorth.com/pro97.html**

HTML Assistant Pro97 may not be the prettiest web editor you'll ever see, but it does sport some of the most powerful features. Beginning with support for almost every HTML command imaginable (including the ability to create your own user-definable tags), HTML Assistant ensures that you'll have all the tools necessary for developing even the most complex of web sites. Table, Form, Background, and Image Map Assistants guide you through the process of designing complex web elements. When it comes to implementing frames, there are few currently available tools that are more powerful and intuitive to use than HTML Assistant's QuickFrames. This feature takes you step-by-step through creating pages with frames and painlessly allows you to set up a web site with frames in a matter of minutes. Additional HTML Assistant features include multiple file find and replace, an integrated spelling checker, an automatic page creator, a word processor file converter (automatically converts Rich Text Format files to HTML files), conversion of HTML tags to upper/lower case upon request, colored tags, multimedia tags support, video support (allows you to create web pages with embedded video clips), automatic browser recognition, support for advanced HTML (including ActiveX objects, Java applets, and CGI scripting), automatic file protection, and automatic calculation of picture sizes (GIF and JPEG graphics are automatically given their corresponding width and height parameters).

Unlike previous versions of HTML Assistant, the current versions will allow you to edit files of any size (i.e. the 32 KB file limit has been removed). The new 32-bit release for Windows 95 and NT (HTML Assistant Pro97) adds support for long file names, allowing you to save files as *.html as well as give files names that are longer than eight characters in length. HTML Assistant also gives you all the features necessary for managing a remote web site from your local computer. The Site Assistant helps you upload HTML Assistant pages to your web server without the need for using a stand-alone FTP client. Taking this theme one step farther, Quick Publish is a one-step tool that allows you to rapidly send the current file (as well as optionally sending all the files it references) to your remote web site. Designed as a quick alternative to the Site Assistant, Quick Publish is one of the fastest methods for editing and uploading web files to a remote site. Overall, on a feature-for-feature basis, HTML Assistant Pro can compete with any web editor currently available. The only thing that holds the client back is an interface that can be downright unattractive and often counterintuitive.◆

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Precedent setting court rulings could limit spam

by Bill McCarthy

EarthLink Networks' scorched earth policy against Internet spam may have the most dramatic effects yet toward eliminating or limiting unsolicited commercial e-mail and spoofing, the practice of disguising the origin of the advertisements.

In what may be a precedent-setting case brought by EarthLink, a California Superior Court judge granted a preliminary injunction against the Net's most notorious spam factory, Cyber Promotions, on May 7, saying that unsolicited e-mail advertisements, including those disguised as coming from a national Internet service provider, constituted a trespass on the company's computer resources. "The judge sent the clearest message yet for a spam-free Internet," said the lead counsel for EarthLink Networks Inc., Paul F. "Pete" Wellborn III. No final decision has been made, Wellborn said, but "we are elated" because EarthLink's attorneys felt the highest hurdle would be the judge's acceptance of the evidence for the preliminary injunction. The evidence included items such as cloaked e-mail and Cyber Promotions' web page advertising promoting its ability to protect the origins of commercial messages.

Sanford Wallace, president of Philadelphia-based Cyber Promotions, said, however, "The door hasn't closed." The case is only in the discovery phase and negotiations are underway that could lead to a settlement. But Wallace, who said his company projects **$4 million** in revenue this year and is responsible for 15 million to 20 million commercial e-mail messages each day, admits, "It's a crazy case." The problem for Wallace is that Cyber Promotions could be held responsible for spam from commercial e-mailers who use his products and services to disguise the origin of bulk advertising

Wallace's company offers products such as Cyber Bomber, the software and service product that sends 50,000 untraceable ads an hour from a standard 28.8 modem, and was proposing to create ISPam, an Internet service provider for bulk e-mailers. Cyber Bomber changes the message ID before e-mail leaves the computer and relays the e-mail through Cyber Promotions' "proprietary high-speed relay network, without identifying the domain name or IP address of the origin." ISPam was to be an ISP for bulk e-mailers having problems finding an entrance ramp on to the Information Superhighway.

EarthLink sought the injunction and still seeks **$3 million** in damages for Cyber Promotions' bombardment of EarthLink's members and machines with unsolicited e-mail advertisements—charges Wallace denied in affidavits. Wellborn, of Atlanta-based Hunton & Williams, said the judge's ruling shoots down Cyber Promotions' attempts to retool and indirectly send bulk commercial e-mail to overcome previous rulings in cases such as those involving online content providers America Online and CompuServe. A federal court ruled in November 1996 that AOL could block Cyber Promotions e-mail ads, eliminating Cyber Promotions claims that such blocks violated Constitutional guarantees of free speech and free press. In May, Cyber Promotions settled a case with CompuServe, agreeing to prohibit its customers from sending spam to CompuServe members and to pay **$65,000** in legal fees. The payment was softened, however, when CompuServe agreed to allow Cyber Promotions to buy **$30,000** in advertising that will offset some of the fees. And Wallace did not seem disturbed by the settlement saying, "That still leaves 50 million e-mail addresses."

If EarthLink adheres to its pretrial statements, Cyber Promotions and other bulk e-mailers may have to take a hard look at how they do business. The difference between the previous cases and the EarthLink case, Wellborn said, is that EarthLink is looking for more definitive rulings that severely

limit or eliminate unsolicited commercial e-mail, spoofing and the unauthorized use of an ISP's network to transmit spam. "EarthLink is really dedicated to proving a point. They detest spam," he said. "So the difference is that after the AOL and CompuServe decisions, they [Cyber Promotions] tailored their conduct and their systems to come into conformance and compliance with the rulings but continued to spam." Cyber Promotions, he said, tried to appear as "a mere conduit not as a responsible party." The injunction is an indication that the judge sees at least enough evidence to listen to the EarthLink argument that Cyber Promotions is just as responsible as the originator of the spam.

EarthLink said that commercial e-mail sent from Cyber Promotions appeared as if it had been originating on its network, which has had a long-standing policy against spam. Harris Schwartz, Information Security Administrator with EarthLink, said, "It very definitely damages our reputation." Wellborn added that the damage to EarthLink's reputation and the flooding of its network with bulk e-mail that either slows the system or, in the worst case, shuts it down is equivalent to taking money from his client's pocket.

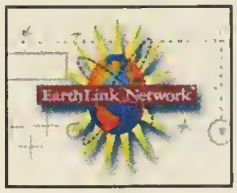
Los Angeles Superior Court Judge Diane Wayne has yet to rule on the monetary damages but found the preliminary evidence indicates that Cyber Promotions' actions constituted a trespass on EarthLink's computer resources, according to court records. Wayne's order prohibits Cyber Promotions from: sending unsolicited e-mail advertisements to EarthLink members and using EarthLink's computer network, systems, equipment, e-mail system, and servers without prior authorization. The order also restricts Cyber Promotions from preventing EarthLink's ability to block commercial e-mail; and inserting false references to EarthLink or its systems, equipment, or domain addresses in any e-mail advertisement, including falsely identifying EarthLink or its users as the source of the e-mail.

Wayne found that Cyber Promotions engaged in the "past and current transmission of unsolicited e-mail advertisements without [EarthLink's] consent" resulting in a "deleterious effect" on EarthLink's systems and operations. EarthLink alleged in court documents that bulk commercial e-mail from Cyber Promotions caused its systems to crash in November 1996 and January 1997.

The Pasadena, California-based ISP provides local access to 300,000 subscribers from 673 points of presence in the U.S. and Canada, and EarthLink has been implementing a new security system in its war on spam. On the day before implementing the security measures, the company received 3,000 spamming complaints, Schwatz said. On the day after installing the first phase of security, EarthLink received 200 complaints.

Even with the new security and injunction, EarthLink says it will not be deterred by the cost and time to establish legal precedents that limit spamming and the practice of disguising the origins of bulk e-mail. "There is definitely a precedent needed," Schwartz said. Wellborn added: "I think we're the guys wearing the white hats here." EarthLink, he said, whether by jury verdict, summary judgment or settlement intends to establish legal limits on commercial e-mail.

EarthLink President and CEO Charles "Garry" Betty declared war on spam on April 30. "The war that we've declared against Internet abuses—including spamming and 'spoofing'—is far from over," Betty said in a May 29 press release. "We will continue our crusade to protect the rights of our members, and the Internet community at large, by taking immediate legal action against any company—large or small—that violates our strict anti-spam policies."



EarthLink is considering civil cases against 12 to 15 other bulk e-mail companies, Schwartz and Wellborn said. In May, EarthLink sent "cease and desist" letters to eight companies that allegedly violated its anti-spam policies. The letter threatens to use all remedies allowed under state and federal law against Real Time Entertainment, S. Maddie Productions, Creative Finance Alternatives, Internet Communications, Inc., Sexy Girls Publishing, LCGM, New York Internet Center, and Prosperity Books. And Wellborn said the company is investigating recent spam to ensure that Cyber Promotions is not violating the court order.

Wallace said his company does not want to send commercial e-mail to those who do not want it and honors requests for removal of names from mailing lists. About 200 EarthLink users want to receive the e-mail, Wallace said. Schawatz said that the company will allow that e-mail to travel across its network when the requests are verified.

The EarthLink case and other recent controversies surrounding the spam debate may already be having an effect. On June 5, Cyber Promotions introduced a policy prohibiting its customers from sending unsolicited e-mail through unauthorized third-party computer systems. Violators will lose e-mail privileges, the company says. Cyber Promotions set up a new address for complaints about unauthorized relaying practices, `relayabuse@cyberpromo.com`. The company said it intends to act swiftly on complaints. The company also says that all e-mail sent through its relay network will be distilled through the Internet EMail Marketing Council's new global remove filter.

The Internet EMail Marketing Council (IEMMC) is a nonprofit organization established in May to promote ethical practices in e-mail marketing. Cyber Promotions is a founding member, as is Apex Global Internet Services (AGIS), an Internet backbone operator. AGIS proposed an organization as a solution to the hot politics of spam on the Internet. Providing bandwidth to bulk e-mailers like Cyber Promotions, brought AGIS heat from anti-spam groups who filed numerous complaints with the company and called for boycotts of AGIS and its users. Speculation held that an attack that brought down AGIS' Washington, DC, point of presence on April 17 may have been related to the spam controversy. AGIS, however, says it is unable to disclose details of the investigation. A reward of **$25,000** is offered for information leading to an arrest and conviction, and the FBI has set up a hot line at **(313) 965-3028**. In recent weeks, though, some have charged that Cyber Promotions found a way around requests by AGIS and IEMMC that members quit sending junk e-mail for a few days while it set up the filtration system.

So Wallace always seems to find a way to push the envelope, and even if Cyber Promotions is backing off on some of its controversial e-mail practices, the company is still willing to wallow in business that others find distasteful. In June, the company announced its Anything Goes web hosting service. "If they turned you off; we'll turn you on. No limitations," the company says, and it is already hosting such vagabond sites as `www.godhatesfags.com`. ◆

THEY BET *the* FARM

With a vision for the Internet and the trust of thousands on the line, DIGEX needed a company that provided a lot more than just hardware.

Very simply, the people at DIGEX℠ bet the farm on Compaq running Windows NT®—a combination that is changing the way we do business on the Internet forever. Two years ago DIGEX was a small regional Internet Service Provider. Today they are a national Internet carrier and the world's largest web site management facility based on Microsoft NT.

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Compaq was chosen to be the exclusive NT platform to power this business because the people at DIGEX needed a company that provided a lot more than servers. Even the most powerful, manageable and reliable servers. DIGEX needed the best proven solutions to implement, manage and grow with NT web hosting. With state-of-the-art systems management and continuous service and support, Compaq provides exactly that. And Compaq's alliance with Microsoft makes certain DIGEX is running the most robust and open platform for the Internet. This is how DIGEX's vision became a reality.

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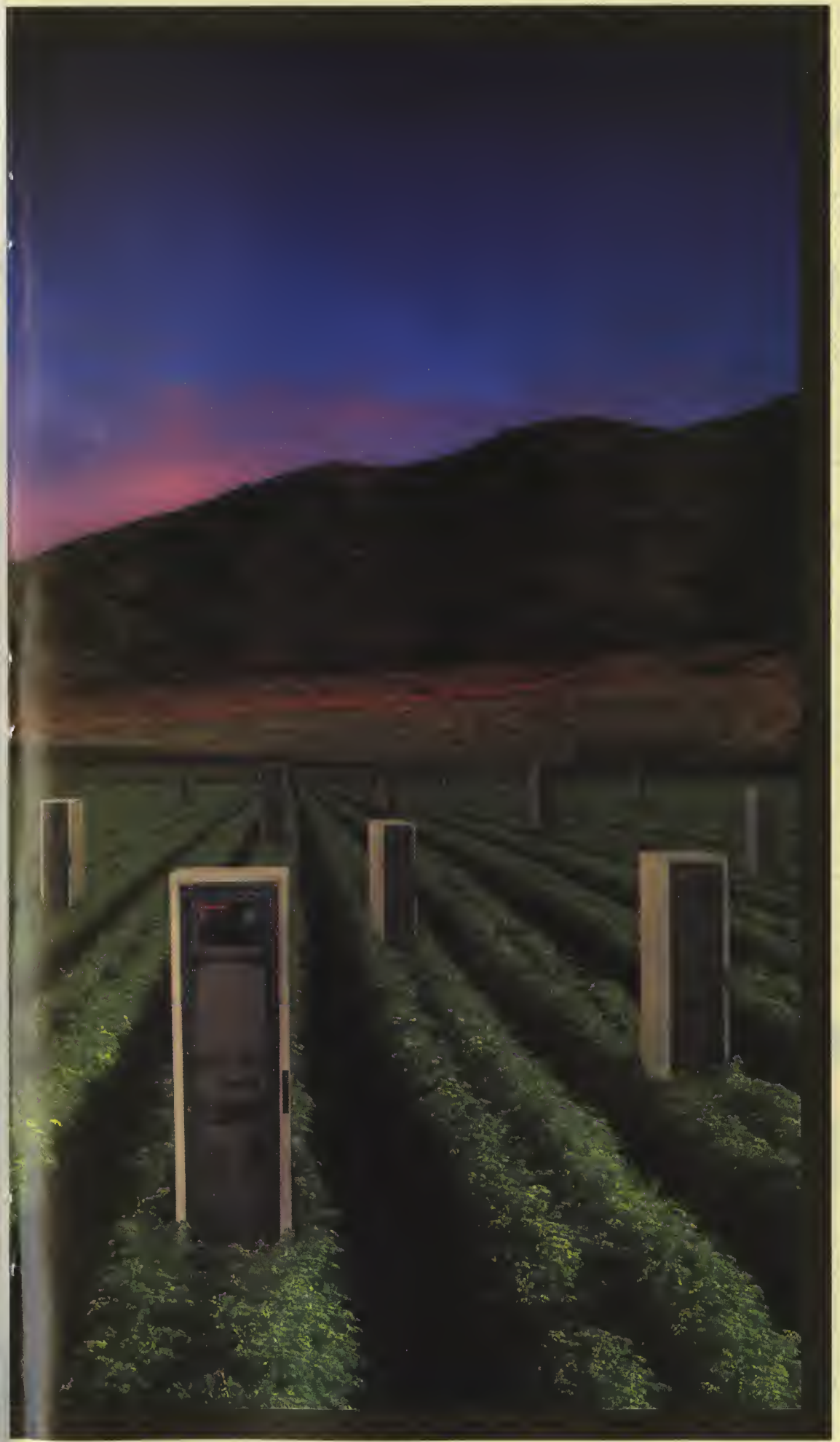

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COMPAQ

TUCOWS

Scott Swedorski

IP POSTERS

Many people have dropped us lines here at TUCOWS to inquire as to how we choose the software we will review for this column each month. For the record, it is a very simple choice for us: We simply review the tons of e-mail that we receive every day, and review the applications that people ask us about the most. If you have any suggestions for future columns, be sure to drop us some e-mail at `tucows@tucows.com`.

Scott Swedorski is president and founder of TUCOWS, The Ultimate Collection of Winsock Software. He lives in Flint, Michigan with his wife, Vicky and 2 daughters, Emily and Ashley. After joining the army at the tender age of 17, Scott received his degree in Computer Information Systems from Mott College, and received an Honorable Discharge after 8 years service. Scott welcomes input from Internet users and software developers at `tucows@tucows.com`.

This month, we will talk about the different IP address posting software available for Windows 95 and Windows 3.x.

The Internet can be a huge place when it comes to tracking down friends and associates online. Thanks to a new breed of software called *IP posters*, finding out if your net-buddies are online is made much easier.

Internet service providers typically provide users with dynamically assigned IP addresses. This is very efficient for the ISP, but it means that users' IP addresses change every time they log in. This effectively precludes users from running any sort of server type software such as FTP, World Wide Web and others. IP posting software circumvents this inconvenience by reading your ever-changing dynamic address from your ISP when you log in and posting it to a predefined web or FTP site. Not only does this make it much easier for people to find you online when they need to, it allows remote users to access a web site or other service running on your desktop PC. If everybody used utilities like this, the Internet would be a much more social place.

DynamIP

Version:	3.0 RC3
Size:	3.2 MB
License:	Freeware
Homepage:	**http://dynamip.home.ml.org**
Author:	Christoph Mueller
Available for:	Windows 95

DynamIP is the most complex IP poster that we reviewed. Although it does have a very pleasant interface, most of the menu options and input boxes were not as self-explanatory as they could have been. The software installed flawlessly, however it did require that the computer be rebooted before the software could be used. A minor point, but the last thing that I want to do when I am anxiously awaiting trying out new software is reboot my PC. Nonetheless, DynamIP is a solid application, once you figure out what all of the setup options mean.

It has a variety of features including capabilities that allow you to post your dynamic IP address to a web site, FTP site, and your home directory as a *.plan* file. If anything, DynamIP suffers from offering too many options. Users can chat with one another, monitor as many as five different e-mail accounts (handy), synchronize their PC clocks with a network time server and use WebChat to exchange messages with other web users. It also allows for the use of Internet Explorer 4.0 Internet Shortcuts, the first time that we have seen this option in any application.

Overall, DynamIP has earned its five cow rating. A very straightforward install, and an incredible range of features earns this application extra points. It does have some minor drawbacks concerning the depth of options available, but advanced Internet users will appreciate most of them. Unfortunately, the program is only available for Windows 95, however if you visit the author's home page, you might be able to convince him of the need for other platform support.

MyIP

Version:	2.2
Size:	2.2 MB
License:	Freeware
Homepage:	**http://members.visi.net/~icdoctor/myipframe.htm**
Author:	MyCorp, Inc.
Available For:	Windows 95

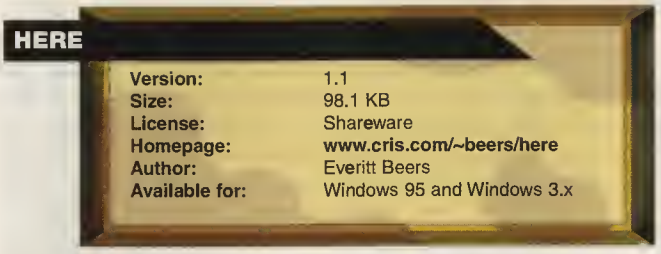
MyIP, also freeware, was the easiest and most user-friendly application we reviewed this month. The setup procedure was extremely straightforward. Once installed, MyIP used setup wizards to assist in what could have been a very complex installation procedure. It was rather confusing when the installation wizard started ringing like a telephone during the setup process, but a few blind clicks led to the discovery that this was nothing more than a "cute" feature that stopped when any button on the chat configuration page was clicked.

Like the other applications, MyIP posts your current IP address to a predefined web page when you are online, along with your user name and a few other bits of information. Additionally, MyIP can be minimized

in the system tray; an option that either did not exist, or was overlooked by us in the other programs we reviewed.

New for this version is an option called "Keep Alive" that ensures that your dial-up connection is maintained by continuously communicating with a network time server. By using simple network time protocol, Keep Alive ensures that you are "online and on-time" by automatically retrieving the world time standard at regular intervals during your online session.

MyIP is, without a doubt, the best of this month's crop. It keeps the installation complexities to a minimum while offering a wide range of useful features. MyIP is sure to be the preferred choice for new and experienced users.



Here does a few things, and does them well. By keeping its feature set to a minimum, Here is a great choice for users who just want to get the job done and don't care about the bells and whistles offered by the other applications. Although the initial installation might be complex for some users (a zip file extraction as opposed to the InstallShield wizard the other applications used), the well-written help files and plain-language menu help minimize potential problems. As an added bonus, both Windows 95 and Windows 3.x versions are included in the downloadable archive.

Although Here is shareware, the tiny size and low cost of registration make it an attractive option for many users. Here will post your IP address to the Internet site you specify, but it also allows you to chat with other popular talk services. Unfortunately, a few of the more advanced features of the program require the use of UNIX shell scripts, which are usually beyond the scope of understanding of the average user. Another minus is that Here does not include an uninstall option.

For only **US$10**, Here is a great alternative to the much larger programs that are available. The features work flawlessly ensuring that most users are not left wanting more from the program. Here is a very straightforward program, with simple, easy-to-understand documentation, which assures that most users will be able to take advantage of most of its features.

It can be argued that IP checking programs are mainly designed for advanced users, but as this month's picks demonstrate, the software is getting easier to use all of the time. And as you become more familiar with the software and terminology, IP posting software will not only add some very useful functions to your web site, but also make it much easier for people to find you online. ◆

ISP$ MARKET REPORT

Paul Stapleton

SOME OPTIONS FOR THE CASH SHORT ISP

At lunch the other day, several back-of-the-envelope calculations suggested to us that some publicly traded ISPs are having a cash crunch and will need to slow growth or raise more cash. Without telling you whether we voted, with straws, to short or buy long, I thought it would be interesting to explore some of the options these companies might be exploring.

First, let's look at who came in for our napkin and envelope calculations. I've listed them in the accompanying chart. These guys have to make some financing decisions. Here's why:

EarthLink (**Nasdaq:ELNK**) and iSTAR (**TSE:WWW**) have less than a half year's worth of cash at their current burn rates.

DIGEX (**Nasdaq: DIGX**) is completing a $27 million equipment lease financing as I write this piece, but that does nothing to alleviate its $2.7 million monthly operating loss. It too will run out by year-end.

MindSpring (**Nasdaq:MSPG**) is closer to operational break-even, but $6.2 million in cash is still not enough to finance growth.

Our envelope exercise doesn't include any cash increase needed to finance working capital and capital equipment as each company grows. Add in those items and these fast growing guys will run out a lot sooner.

What are these companies going to do? With the capital markets reviewing Internet opportunities more selectively, raising more cash from a follow-on-equity issue may prove difficult. For that matter, what could similarly placed private ISPs do?

Every business needs a financial strategy as much as it needs a marketing and operating strategy. Fortunately, it really isn't that complicated. Strip away the fancy machinations and cash to run the business only comes from four sources: operations, debt, equity, or asset sales. Let's take a look at each option for our sample set above.

These companies are all still losing money from operations. On the positive side, this is not an unusual spot for new companies. Companies pass though very predictable life cycles: start-up, growth, and maturity. In the start-up phase they tend to burn a lot of cash. In fact, rapidly growing businesses are always cash-starved as new orders outstrip the cash coming in from last months smaller order volume. They need new capital equipment to create more capacity to support higher sales.

Nevertheless, while it may be nice to know there is a business model to explain their situation — if managed well, they can outgrow the problem — they still need cash today.

So, one option is to stop growing so fast. This may seem heretical at first. Growth is something most managers (and investors) desire. They reason that growth equals increased market share and profits. However, hypergrowth creates unique financial needs. In businesses with low barriers to entry, growth can lead to chronic unprofitablity. More than one rapidly growing company has gone bankrupt. That's sad.

One of us at lunch argued that Netcom (**Nasdaq: NETC**) and IDT Corp. (**Nasdaq: IDTC**) have chosen this strategy. Rather than book as much business as possible, Netcom has moved away from offering $19.95 flat-rate dial-up and IDT has cut back on advertising to gain new customers. Both are now hovering around operating cash flow break-even and will

ISP	Cash at 3/31/97	Est. Monthly Cash Burn*	Months of Cash
DIGEX	23.2	2.7	8.6
EarthLink	13.1	2.8	4.7
iSTAR internet	14.9**	2.7	5.5
MindSpring	6.2	0.2	31.0

Cash in millions. Source: ISP Report, Company Documents.
* Operating Income/loss plus depreciation. Does not include working capital or capital equipment needs. ** Cash at February 28, 1997.

After bouncing back and forth between finance, publishing and the Internet, Paul Stapleton has landed squarely in the middle. He is Managing Director of Stapleton & Associates, an Internet focused financial consulting firm. Clients include major players as well as start ups and middle market companies in media, telecomm and software.

Paul Stapleton is also editor of *ISP Report* (to subscribe, e-mail `ispreport@mediabiz.com` or call **303-271-9960** or fax 303-271-9965; annual rate is $195; sample issue sent on request) the newsletter of record for financial activity in the ISP industry. Paul welcomes comments and suggestions at `paulstapes@aol.com`. He lives in Boulder, CO with his lovely new bride.

INTERNET STOCK PERFORMANCE/MARKET CAPITALIZATION

SYMBOL	STOCK EXCHANGE	COMPANY	PRICE 4/10/97	PRICE 5/1/97	PRICE 6/11/97	MONTHLY PRICE CHANGE	MARKET CAPITALIZATION (MILLIONS)
AOL	NYSE	America Online Inc.	$46.63	$47.63	$59.38	24.67%	4,476.13
BBN	NYSE	BBN Corporation	17.00	23.00	28.88	25.54%	483.30
CSRV	NASD	CompuServe Corp.	11.75	9.38	10.63	13.33%	868.13
DIGX	NASD	DIGEX Incorporated	7.25	8.63	12.88	49.28%	97.33
ELNK	NASD	Earthlink Network	10.50	8.63	13.38	55.07%	81.44
IDTC	NASD	IDT Corporation	5.25	5.75	8.50	47.83%	119.84
WWW	TSE	iSTAR internet	1.61	1.51	1.55	2.52%	28.48
MSPG	NASD	MindSpring Enterprises	7.88	8.13	9.88	21.54%	60.74
NETC	NASD	NETCOM	9.88	10.63	15.31	44.09%	123.58
OZEMY	NASD	OzEmail Limited	6.50	6.44	8.13	26.21%	65.66
PSIX	NASD	PSINet Inc.	6.94	6.13	8.94	45.96%	245.43
RMII	NASD	Rocky Mountain Internet	2.06	2.25	2.81	24.89%	8.72
INDUSTRY AVERAGE			**$9.95**	**$11.10**	**$11.51**	**TOTAL**	**6,658.77**

Source: ISP Report, Stapleton & Associates, Company Press Releases and Financial Statements

probably reach it soon. Nothing like the discipline of tight cash to force management to focus on improved operations.

Another trip to the public equity market is not in the cards right now. These stocks are trading close to historical lows. Bankers, investors and management have trouble getting comfortable doing secondary offerings below the price of the prior offering. Saying it a little more technically, now may be a good time to stay within the business' sustainable growth.

In finance, there is the concept of "sustainable growth." It is defined as how fast a company can grow without diluting its equity. It is dependent on the company's operating profit, required sales to asset ratio and acceptable debt to equity ratio. If the market is pricing your equity lower than you think it is worth, then you may want to stay within your sustainable growth to avoid economically irrational dilution.

However, for bankers willing to earn their fees, now may be a great time to generate some business. I believe there is room for a private placement of preferred stock or convertible debt on these balance sheets. Larger telecoms are natural customers. They all have strategic Internet initiatives. They have all launched services, with mixed results. Consequently, they are all now reviewing the "make or buy" option. Buying a preferred issuance in an ISP, at a market discount, makes sense from a strategic and financial investment perspective.

Debt on the balance sheet in high technology has traditionally been considered taboo or unavailable. The cash flow is too unpredictable. Product life cycles change too quickly. The financial ratios, like interest coverage, are not strong enough. That said, off balance sheet debt finance is one of high-tech's dirty little secrets. And some larger ISPs even have bank lines or bonds.

Debt, from the day the founder whips out his Visa card to buy the first machine, has often been used to finance equipment purchases. This is one of DIGEX's recent solutions to the problem. Cisco Systems Capital Corporation, Mellon US Leasing, Rave Financial Association and Trans America Business Credit are providing a $27 million financing to buy capital equipment. Cisco creates a larger router market by providing financial assistance, and it makes money on the financing.

Although the sale of non-essential assets is not a real cash generating option for these companies, there is always the ultimate asset sale, selling the company. BBN Corp. (**NYSE:BBN**, **NYSE:GTE**) recently decided this was the best way to finance its future growth despite having a two year supply of over $100 million in cash. (It's always best to plan for your future financing needs well before you actually need them.)

These are viable options for our cash-starved ISPs. Dress it up if you like or fold the envelope or napkin differently, there are still only these four: operating cash, debt, equity and asset sales.

We'll watch over the next few months to see what various ISPs do (and one of us will be stuck with a large lunch bill).

By the way, if you are a private ISP with an interesting financing story, please e-mail me. Perhaps you have a story for this column or our newsletter, I$P Report, The Financial Newsletter for Internet Service Providers. ◆

EURO NEWS

Richard Baguley

INTERNET NEWS FROM THE UK AND EUROPE

Richard Baguley is an ex-editor of Internet Today magazine, an ex-editor of Amiga Shopper magazine, and a widely respected writer and Internet consultant. His work has appeared in magazines such as Mac Format, Internet Magazine, .Net, Wired News and WebMaster.

He lives in the UK and likes drinking tea.

He now works as a freelance writer specializing in computers and that newfangled Internet thing. He can be contacted at baggers@baggers.com.

PRIVACY IN THE UK

Shortly before the UK election, the civil servants of the Department of Trade and Industry (the section of the Government that deals with administering trade within the UK and abroad) produced a proposal on the use of encryption within the UK. This proposal (www.dti.gov.uk/pubs) recommends the mandatory licensing of encryption software for use in the UK, with one of its conditions being the provision of a key escrow system within the software. If the proposal becomes law, it would restrict the use of encryption software to systems requiring a copy of the decryption key to be lodged with a Trusted Third Party (TTP), who would be licensed by the UK Government. A law enforcement organization (such as the police or MI5/MI6, the UK equivalents of the FBI and CIA) would then be able to get a copy of this key by obtaining a court order similar to the search warrant required to search a suspect's house. The use of encryption programs that aren't licensed in this way would become an offense.

In the words of the proposal, "The legislation will prohibit an organization from offering or providing encryption services to the UK public without a license...The offering of encryption services to the UK public (for example via the Internet) by an unlicensed TTP outside of the UK will also be prohibited." (paragraph 72)

Needless to say, this proposal has caused something of a stir in the UK. At a conference on the proposal in May, many speakers voiced their concerns. Dr. Ross Anderson, of Cambridge University, described it as being "founded on lies" — the lie that cryptography is about secrecy and that intercepting encrypted communications could help law enforcement. The proposal claims that it is vital for the police to be able to intercept e-mails and the like, but Dr. Anderson claimed that over the last 12 years in London, only one prosecution out of thousands had been based on intercepted telephone calls. He also claimed that the Department of Health was opposed to the proposal on the grounds that it could possibly compromise the security of patent records held on their computer systems if they were forced to lodge the decryption keys with a third party.

There was also some concern over who would be a "trusted" third party — who would users trust to hold such potentially damaging information? Would a company be prepared to give a key to a third party that could potentially give access to their trade secrets?
The future of the proposal isn't exactly clear at the moment — the proposal was produced under a conservative administration, and the Labour Party (who have been opposed to such measures in the past) are now in power with a sizable majority. The public consultation section of the proposal ended at the end of May, and the civil servants who produced the proposal will now re-examine it and make recommendations to the government as to how to proceed. It's not clear how they will proceed, but nothing is likely to happen immediately. The government has already announced a full program of legislation for this session of Parliament, so no new laws on encryption are likely until 1998 at the earliest. The civil servants who produced the proposal also hinted at the conference that they may be rewriting significant sections of the proposal before it is put to the government, although the central point of the proposal (to license software and TTPs) is likely to remain.

However, the proposal is really only part of a bigger, European-wide picture. Many European governments have been making their own proposals for laws on encryption, and both the European Union (EU) and the Organization for Economic Co-operation and Development (OECD) have been taking a very active interest in the use of encryption in Europe. Both have been working on proposals to determine how encryption can be used and how the various law enforcement agencies should work with this. A recent OECD recommendation (at www.oecd.org/dsti/iccp/crypto_e.html) suggests that any new laws "may allow lawful access to plaintext, or cryptographic keys, of encrypted data," leaving member governments free to implement laws to restrict the use of encryption.

Many European countries already have restrictions on encryption (it is illegal to use PGP in France, for instance) and it seems likely that other countries are considering introducing legislation of this type.

TO x2 OR NOT x2? THAT IS THE QUESTION...

The UK branch of modem manufacturer US Robotics is claiming that x2 is a great success. They claim that over 40 ISPs have committed to upgrading to x2, giving them a significant chunk of the dial-up market in the UK.

This follows an extensive advertising campaign for both x2 and USR modems, including TV advertising and in specialist magazines and newspapers. They also flew representatives of over 200 European ISPs to Canne in the south of France earlier this year to be wined, dined and hear the company line.

Many UK ISPs have also been using the x2 logo in their marketing, contributing to the impression that it is the only real option for fast Internet access in the UK. The UK branch of UUNET (formerly known as

Pipex) have been using the speed increase of x2 modems as a primary part of their marketing, claiming that their service can offer a "100% faster Internet delivery speed," with a small note at the bottom to the effect that this requires a US Robotics 56K modem. Of the 18 ISPs that advertised in the June issue of *Internet Magazine* (which claims to be "Britain's best selling Internet magazine"), seven were carrying an x2 logo on their advert, while only one was carrying a K56flex logo.

The widespread adoption of x2 in the UK is partly due to the high cost of ISDN — an ISDN line from British Telecom (BT) still costs much more than a normal phone line. Although cable companies are making inroads into the UK telecom market, very few have decided to offer ISDN services, and those that are offering ISDN have chosen to follow the premium pricing plan pioneered by BT. This means that ISDN use is still very much in the minority. Although many ISPs offer it as an option (usually for the same flat-fee access charge as normal modem access), it only forms a small part of their businesses. ISDN has made some inroads into business (particularly with media businesses), but it is still not in widespread use.

So, in the UK at least, x2 is being welcomed with open arms by a significant number of ISPs. Rockwell, however, has failed to make much of an impact. They haven't started advertising in the UK, and very few of the modem manufacturers who have committed to supporting K56flex have really started promoting it. Although Rockwell chip sets have a significant chunk of the UK modem market, they have not yet started aggressively marketing it as an alternative to x2 and only one ISP (Globalnet at `www.globalnet.co.uk`) has so far committed to upgrading their systems to support K56flex. This situation means that US Robotics has a dominant position and Rockwell has all the ground to make up.

However, the position in Europe is rather different. The Dutch ISP XS4ALL has decided not to bother with x2 or K56flex until a standard has been defined. "x2 is not a standard," Says Felipe Rodriquez of XS4ALL. "It's a proprietary US Robotics technology. Choosing x2 would tie us down to US Robotics, and would also force our customers to choose US Robotics. We do not wish to be part of a marketing war between manufacturers, and will choose protocols that are supported by a majority of the industry and end-users."

ISDN is also much cheaper on the continent. "Anyone in Holland can get a ISDN connection," says Rodriquez. "ISDN modems are cheaper than x2 or K56flex modems, and ISDN is faster too (56K tech is 56K one way, and 28.8 the other way. ISDN is 64k both ways; much better for the end user.) I recommend our customers to upgrade their analog phone lines to ISDN lines. We do not charge our customers extra for ISDN; the extra bandwidth they use is compensated by lower costs for ISDN equipment on our side."

COMPUSERVE CHARGED

A manager at CompuServe Germany was charged with allowing illegal material to be distributed through his service in April. In particular, the indictment alleges that he allowed images of bestiality and child pornography to be distributed through CompuServe's network. The indictment also alleges that some of the material that was made available through CompuServe displayed swastikas and pictures of Hitler, both of which are illegal under laws created in the wake of World War II to prevent the re-emergence of fascism.

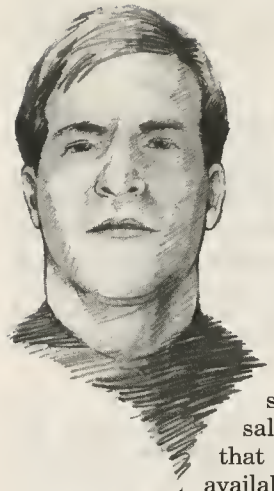
The indictment follows an incident in 1995, where German police instructed CompuServe to remove over 200 newsgroups from their service or face further legal action. At the time, CompuServe complied and removed the newsgroups, but it seems this wasn't enough for the German police. At the same time that legislation was being put through the German Parliament to protect and clarify the legal position of service providers, the Bavarian police decided to strike at CompuServe again by prosecuting one of their top level managers. Although new legislation to clarify the position of ISPs in Germany has been widely welcomed, there has been some concern over sections which could mean that ISPs would be forced to co-operate in the blocking of material that the German authorities consider to be illegal.

This also follows an incident in April where the German academic network Deutsche Forschungsnetz (DFN), which provides Internet access for all German universities, blocked access to the Dutch left wing magazine *Radikal* (`www.XS4ALL.nl/~radikal`). This was done on advice from the German police that an article entitled a "Short Guide to Hindering Railway Transports of All Kinds" might be illegal under the new laws. This was also to do with the fact that several trainloads of nuclear waste were about to be transported through Germany and many groups were planning demonstrations and actions to stop this transport.

However, they were unable to block the individual site and ended up blocking the entire `www.xs4all.nl` web server, which hosted over 6,000 other web sites. Rodriquez, of XS4ALL, commented that "the decision to censor the XS4ALL web server because of the *Radikal* publication will probably cause this censored magazine to become more popular on the Net."

Several thousand other web pages (including the Serbian opposition radio station B92, who were using XS4ALL to broadcast over the Internet following a government clamp down and several pages from scientific research organizations) were blocked by this action, and the network backed down a week later and removed the block. Eckart Maass, a DFN spokesman, claimed that "Maintaining the blockade was not feasible." Numerous complaints had been received, including many from users who needed access to the scientific sites hosted on XS4ALL. Over 40 mirror sites of the magazine were also created, including one hosted by a member of the German parliament opposed to the action.

Many of the current arguments in Europe are similar to those that took place in the U.S. following the Communications Decency Act, and there are still relatively few precedents to say what should or should not be allowed to happen on the Internet. In Europe, the battle lines are still being drawn.◆



POLICY FORUM

Rudolph J. Geist

Rudolph J. Geist is a telecommunications attorney at Washington DC-based Wilkes, Artis, Hedrick & Lane specializing in and helping to develop the emerging field of Internet law. When Mr. Geist is not trying to understand and resolve very complex and substantial legal, regulatory, legislative and policy issues for ISPs, and serving as counsel to the United States Internet Providers Association (USIPA), a national trade association representing the interests of ISPs, he enjoys riding his enduro motorcycle and gardening.

One of a multitude of current projects Mr. Geist is currently working with USIPA to develop is a special guide for its members which provides a framework for taking advantage of the new USF subsidy program. Mr. Geist is also a contributing writer to I$P Report, the new financial newsletter just for ISPs.

Mr. Geist can be reached at rgeist@wahl.com, by telephone at **(202) 457-7345**, or by e-mail sent through the USIPA web site at www.usipa.org.

In early May, the Federal Communications Commission implemented its new Universal Service Fund (USF) program that will make $2.25 billion per year available for ISPs and other providers of telecommunications services to connect schools and libraries to the Internet. The program is one of the new initiatives called for by the Telecommunications Act of 1996 and carries through the President's widely publicized goal to "wire" the nation's schools and libraries to the Internet by the year 2000.

ISPs CAN CONNECT SCHOOLS AND LIBRARIES TO THE INTERNET — AND GET PAID OUT OF $2.25 BILLION FEDERAL GOVERNMENT SUBSIDY PROGRAM

The Universal Service Fund was originally established for the purpose of subsidizing local telephone service to our nation's rural and poor citizens. Now the FCC has decided to make money available from the fund for connecting schools and libraries to the Internet. The USF is comprised of contributions made by telecommunications carriers such as local exchange telcos, IXCs, and wireless telephone providers. As the developers of the Internet, the FCC wants ISPs to be very active participants in competing for the school and library contracts under the fund. This promises to be a very substantial business opportunity for ISPs with **$2.25 billion** per year available from the federal program, and the states acting to make even more money available through their own funding programs modeled after the federal plan.

Over 112,000 schools and thousands of libraries nationwide are eligible for the discounts and will be pursuing these grants. ISPs are ideally suited to provide the types of Internet services that schools and libraries desire, including providing internal wiring, servers, routers, hubs, CSU/DSUs, software, remote access, backbone connections, installation, training and consulting. The FCC has decided not to dictate what technologies schools may use, allowing them the freedom to work together with providers to develop a plan that is best suited to fulfilling their particular needs.

The FCC's new program allows schools to receive between 20 percent and 90 percent discounts on advanced telecommunications services, beginning January 1, 1998. To become eligible for the discounts, schools and libraries must first seek certification from the FCC's Fund Administrator, which they can apply for beginning July 1, 1997. To obtain certification, a school or library must provide a technology plan to the Fund Administrator as part of the certification process. The school or library must also certify the percentage of discount it may receive based on a showing of the number of children in that particular school who are eligible for the national school lunch program, or in the case of a library, the percentage of children in that school district who are eligible for the national school lunch program. Upon receiving certification, the school must then put out a request for proposals (RFP) to interested Internet service and other telecommunications providers over a specially created web site. Notwithstanding the FCC's bidding requirements, schools and libraries will be subject to any state and local competitive bidding laws, if applicable.

After a minimum four weeks of posting the RFP on the FCC's special web site and compliance with whatever state and local bidding requirements may apply, the school or library is permitted to sign a contract with a provider, which must then be approved by the Fund Administrator. Once the approval of the Fund Administrator has been obtained for the contract, the school or library may allow the service provider to implement the contracted services. Upon completion of the service installation, the school must make payment of the non-discounted portion of the contract price to the service provider. The school must then certify to the Fund Administrator that the services have been provided and that therefore, the service provider may be reimbursed the subsidized amount of the contract from the Fund Administrator.

Under the FCC's new rules, interstate tariffed incumbent local exchange carriers (ILECs) are permitted to offer schools and libraries specially discounted tariffed pricing on the necessary interstate telecommunications connections to hook schools and libraries together and to the Internet backbone. However, the same special discount rates are not required to be made available to ISPs who wish to purchase the same interstate telecommunications services for the purpose of competing for contracts to connect the same schools and libraries to the Internet. This is an apparent inconsistency on which the FCC may not have focused in its massive 500 page order setting up the new rules. On one hand, the FCC wants independent ISP participation in the subsidy program to ensure a competitive marketplace from which schools and libraries can select the most advanced telecommunications services. On the other hand, by permitting interstate tariffed ILECs to offer discounted tariffed prices on interstate services only to schools and

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libraries, the FCC may have made it more difficult or, in some cases, potentially foreclosed the opportunity to compete for many ISPs who rely on interstate tariffed ILEC services for their telecommunications connections. One thing ISPs can do to compete more effectively is to look for partnering opportunities with competitive local exchange carries (CLECs). Many CLECs now exist in tier 1 and tier 2 local exchange telecommunications markets, and have already signed interconnection agreements with tariffed ILECs which permit them to compete head on. ISPs who can arrange these partnering agreements will likely be in a stronger position to bid on and obtain the school and library contracts.

This massive subsidy program also involves the participation of the various state regulatory or utility commissions. Each state must implement the FCC's rules as to intrastate services for their schools and libraries to participate in the federal subsidy program. In this process, a state may potentially make slight modifications to the FCC rules as applied to that state's particular schools and libraries. In addition, many states are working on developing their own subsidy programs for schools and libraries to obtain further discounts similar to those in the federal program for intrastate services. It is estimated that a combined **$1.75 billion** may be made available from the state programs in addition to the federal money. In developing these programs, ISPs must ensure that the states are including independent ISPs in the process and the programs. Having independent ISPs involved in connecting schools and libraries to the Internet is very important, which the FCC realized in permitting independent ISPs to participate in the federal subsidy program. While the state situation would be no different, some states have been reluctant to involve ISPs in the planning process reasoning that because ISPs do not contribute directly into the Universal Service Fund, they should have no say in how the subsidies are distributed. This argument has already been resolved at the federal level and is a myth. The truth is that ISPs pay indirectly into the USF every time they write a check to pay for the hundreds or thousands of circuits they have ordered. Telecommunications carrier contributions to the USF are based on revenues received from customers, including ISPs. It is actually the rate payers, including ISPs, who ultimately, albeit indirectly, fund the USF.

If ISPs don't compete for the school and library contracts, then there will also be future ramifications. If ISPs do not actively participate in bringing the Internet highway, that they were instrumental in building, to the schools and libraries, then they will be at a very significant disadvantage, vis-à-vis other competitors, in achieving name recognition and business from future generations of customers in their service territories — today's school kids. Likely, a single provider that is able to offer all the desired services bundled together will win the contract to hook up entire school districts and school and library consortiums spanning across communities, counties, states, regions, and even the nation. The service provider winning each contract will be able to utilize its efforts in hooking up the school or library as a marketing tool to boast its connection with the community, creating publicity and goodwill, and ultimately a competitive advantage for obtaining more business. If independent ISPs are not involved in this campaign, then they may lose the opportunity to achieve this same community goodwill — and significant future business opportunities.

In addition, the schools and libraries will lose out since they will not be served by the best entities in the business in delivering advanced services — ISPs. ISPs built the Internet and have been the leaders in providing Internet services, which is the primary reason for its widespread development to date. ISPs have the knowledge, experience and capabilities to assist schools and libraries in implementing the highest quality and most cost-effective equipment and connections required to construct intranets and connect them to the Internet backbone. Surely, without substantial involvement of ISPs in connecting schools and libraries to the Internet, our nation will not benefit from the very best services available for connecting its schools and libraries at the lowest cost.

The sheer length of the new Universal Service Fund rules and the complexity of the issues relating to those rules aptly illustrates the growing importance of governmental regulation and policy in the future development of the Internet. ISPs must become more cognizant of these issues, and become more involved in shaping their results. ISPs need to work more closely with state and national ISP organizations to help pull ISP resources together to upgrade the education and lobbying efforts. In addition, ISPs can keep their customers informed about issues, using them to help support grassroots campaigns. These actions together will help ISPs to ensure a more vibrant competitive position in the quickly expanding Internet services market.

As the Internet industry continues to grow at geometric rates, so does the number of entities looking to get a piece of the action. At the same time, this growth frenzy has spurred significant interest by governmental bodies with respect to numerous important issues, such as USF subsidies. To avoid adverse future results, ISPs need to get more involved. It is very difficult for most ISPs just to concentrate resources in an attempt to maintain a competitive position in this fast moving industry without spending additional time addressing what the government is doing that might effect that competitive position. However, the outlook for independent ISPs is quickly demanding nothing less than an absolute requirement that ISPs take a more active role on policy issues, or face potentially substantial impediments in their future competitive position.◆

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GUTHY-RENKER INTERNET

ISPCON '97 Opens Doors To Opportunity

by Bill McCarthy

Lots of folks shook their heads and said he was crazy when Halsey Minor decided in 1992 to combine cable television programming with a site on the Internet. But Internet folks started taking him seriously when the former investment banker posted half a million registered users in a year at his web site, and when his geek-speak-free computer television show built an audience of over a million attracting the likes of IBM and MCI as advertisers. And no one laughed in 1996 when the founder and CEO of CNET pulled his company through a $32 million initial public stock offering on quarterly revenue of less than $1 million. Instead some compared him to Apple's Steve Jobs as an entrepreneur with boundless energy, enormous vision and a willingness to take calculated risks that will make things happen.

Crazy ideas can turn into profitable realities on the Internet, as Minor's story illustrates, but not without a solid base of knowledge about the technical, managerial and financial issues that surround such businesses. For one weekend in August, those who take the business of the Internet seriously will have access to an assortment of the best resources available, including Minor. The CNET CEO will be one of more than 100 Internet entrepreneurs, technical and financial experts and government officials who will be featured speakers at the world's largest gathering of Internet service providers, ISPCON'97. Minor symbolizes what the conference, August 21-23 at the San Francisco Hilton Hotel and Towers, is all about. Nowhere on the face of the planet will there be a larger gathering of Internet service providers than at ISPCON'97, and no where will there be a better opportunity to start getting the knowledge that can turn that crazy idea for an Internet business into a calculated risk that becomes reality or to get the information needed to take an existing Internet-related business to the next level. ISPCON'97 is a prime opportunity to rub elbows with the who's who of the Internet services industry and to pick their brains. Along with Minor, luminaries such as Robert Pepper, chief of the Federal Communications Commission's Office of Plans and Policy, and Tim O'Reilly, the founder of a leading books and software publisher for Internet professionals will be speaking.

Minor is proof that while folks are laughing at your crazy idea, the right vision, knowledge and connections can bring success. As chairman and CEO, Minor built a thriving network with four television series in production and nine Internet sites. The company's television series, which air on USA Network, the Sci-Fi Channel, and in national syndication, reach an estimated weekly audience of over four million viewers. CNET's Internet sites include CNET.COM, NEWS.COM, GAMECENTER.COM, SHAREWARE.COM, SEARCH.COM, DOWNLOAD.COM, BUYDIRECT.COM, ACTIVEX.COM and Mediadome. They are among the most visited sites on the World Wide Web. Prior to founding CNET, Minor worked for Russell Reynolds Associates Inc., the world's largest executive search firm. He was involved in every facet of the firm's operations at the executive level. Earlier in his career, Minor founded the Global Publishing Corporation, a producer of computer-based multimedia business training applications distributed over computer networks. Minor worked as an investment banker for Merrill Lynch Capital Markets in New York after graduating with honors from the University of Virginia.

While Minor could find little support for his ideas in their early development, ISPCON is structured to present the information and education that ISP operators and content, technical and design developers need to seize the opportunities of the future. For example, the Telecommunications Act of 1996 encourages deployment of advanced telecommunications capability to all American homes, elementary, and secondary schools. But we still do not have clear definitions of the roles of telephone companies, Internet service providers and government in building the future of these networks. As new networks develop, who will pay? What will be the access charges for Internet service providers? Where will the opportunities lie?

ISPCON offers ISP operators and networking professionals an opportunity to hear Robert Pepper and ask those questions. The chief of the Office of Plans and Policy at the Federal Communications Commission oversees an agency responsible for policy questions that cut across traditional industry and institutional boundaries, especially those arising from the development of new technologies. At OPP, Pepper's responsibilities have included leading teams implementing provisions of the Telecommunications Act of 1996; designing and implementing the first spectrum auctions in the United States; developing more market-based spectrum policies; assessing competition in the video marketplace; and assessing the impact of the development of the Internet on traditional communications policy structures.

Pepper was the Commission's representative to the interdepartmental National Information Infrastructure Task Force and a member of its Telecommunications Policy and Technology Policy Working Groups. Pepper's previous positions at the FCC have included senior advisor and acting deputy chief of OPP. Before joining the FCC, Pepper was director of the Annenberg Washington Program in Communications Policy Studies. He also has been director of domestic policies and acting associate administrator for policy analysis and development at the National Telecommunications and Information Administration and developed a program on communications, computers, and information at the National Science Foundation. Additional academic appointments have included a position as a professor of Communications at the University of Iowa and a research affiliate with the Program on Information Resources Policy at Harvard University.

Pepper, who will be the keynote speaker, has published and lectured widely on telecommunications policy issues and has served as a consultant to industry and government. He holds a doctorate from the University of Wisconsin-Madison.

There will be plenty of other visionaries offering talks and discussion as well, such as national backbone operators who started by running small ISPs like David Jemmett, CEO of GoodNet, and Robert Laughlin, president of DataXchange Network Inc. Others such as Pushpendra Mohta, TCG CERFnet vice president of Internet Services, are experts on the global Internet. Mohta is an internationally renowned expert in

Fast Packet technologies and current and emerging Internet architecture, hardware, and software techniques. During his career, he has helped establish Internet backbones in the United States, Brazil, Fiji, Germany, India, Korea, Mexico and Venezuela.

Along with ***Boardwatch Magazine*** hosts include **Cisco Systems, US Robotics, Bay Networks, Digital Equipment Corporation, Compaq Computer,** and **Rockwell Semiconductor Systems**. Not only are they sponsoring the show, but they will offer detailed hands-on workshops on how to manage various technical aspects of operating an ISP business. These big players in the technical market will have their own meeting rooms as well as booth space with demonstrations of their hottest products.

ISPCON is the only annual trade show and convention designed specifically for Internet service providers. The show started in 1992 as a small meeting for online developers of all types in Denver, Colorado, called ONE ISPCON. Through the years, however, the show has evolved with the tremendous growth in the online industry. In 1996, the show focused exclusively on Internet service providers, not only those who provide connectivity to the Internet, but those who provide web hosting, design services, and manage electronic mail, newsgroup services and other IP services that end-users need. More than 3,000 people attended the 1996 conference, with 946 of them employees at companies who offer public Internet access, many of them leaders in the field. While outnumbered by vendors, software developers, financiers, and would-be Internet entrepreneurs, ISPCON '96 easily qualified as the largest gathering of Internet service providers in history, with 42 countries represented. Thus far, more than 1,000 Internet service providers have signed up for the 1997 conference. Attendance and vendor exhibits will surpass any previous show for ISPs, so sponsors have added additional educational sessions and exhibits at the Hotel Nikko, a half of a block from the San Francisco Hilton and Towers.

Coverage will include marketing issues, scaleablity, technical and operational concerns and new business opportunities in the nine session rooms at the Hilton and two at the Nikko. More than 120 educational sessions presented over the three days with as many as 11 sessions at any one time. Top names in the industry will be involved with representatives from IANA, InterNIC, the FCC, the Internet Society as well as numerous equipment vendors. ISPCON offers the most intensive set of educational seminars available dealing with issues of Internet access and services. The hottest issues of the moment, such as peering agreements, working with the RBOCs, financing, and technical issues like multi-homing will be addressed by panels of top professionals. Vendors, the computer press, venture capital firms, telcos, cable companies and government will be well represented.

ISPCON is the one industry event where ISPs meet face-to-face to discuss the pressing issues facing entrepreneurial Internet companies, and discuss those issues not only with those affect their business through such things as regulation but their vendors. Very few events allow vendors an opportunity to meet with more than a sprinkling of ISP operators. One-hundred-and-four industry vendors exhibited at Moscone Center in 1996, and early indications are that the number of vendors exhibiting this year will exceed that as will the number of educational seminars, hospitality suites and evening get-togethers. Technical people will also have ample opportunity to discuss configuration and operational details with some of the top engineers in the country.

The focus at ISPCON is to take you from wanting to use the technology for that crazy idea, through the knowledge barrier, so you know how to build and deploy the service you want. So, let them laugh at your crazy idea, pack your head full of the knowledge during the only three day conference that provides personal one-on-one access to the busy people who implement and shape technology daily. No place on the planet makes it available, except at ISPCON'97. ◆

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Requiem For DIGEX by Doug Mohney

BASEMENT NET STARTUP GROWN INTO $150 MILLION POWERHOUSE

Doug Mohney became employee #10 at DIGEX in October 1993. He has learned and forgotten lots about help desk support, competitive intelligence, sales and marketing, leased-line service ordering, telco services, and PR; he makes no pretenses at understanding anything more about the tech side of IP other than being able to get a PPP account working. He currently is manager of DIGEX's ISP-TV Internet Broadcast unit and his writing has been published in the LA View, Washington Technology, and the Washington Post. Doug receives e-mail at mohney@digex.net.

Far from the chauvinism of Silicon Valley and roughly straight across the belly of Washington, DC, from northern Virginia Internet powerhouses UUNET and PSINet, the genesis of a **$150 million** Internet service provider was booted up in the basement of Doug Humphrey's townhouse in Greenbelt, Maryland, in 1991.

DIGEX — 6800 Virginia Manor Road

Little did either Doug or co-founder Mike Doughney expect that their shoestring venture into online services would turn its diametrically opposite partners into millionaires as they started Digital Express Group, Inc., or DIGEX as it later became known, on a second-hand Sun 3/60 and a whole four phone lines. Humphrey stands 6-foot-3 and is built like an offensive lineman, someone who should fly in first class by default because it's ridiculous to see him wedged into a coach seat. Doug's most powerful gift is his ability to captivate an audience through a combination of humor and personality, followed by his vision and creativity. Doughney provided patience and a plodding, anal-retentive methodology to getting things done, with a quiet personality more suited to the background of billing systems and telephone work rather than the foreground of promotions and selling.

Their business started out of any good hacker's desire for a reliable source of e-mail and Usenet news outside of the confines of university computer centers. Back then, the Net was strictly an academic tool. When you graduated from school, you lost your Net access. Humphrey wanted to have a way to keep in touch with his friends and Usenet independent of a college or job, and he figured (correctly) Net-addicted graduates would pay for the service. Advertising was done with a combination of colorful flyers strewn across the campuses of local universities, word-of-mouth, and through announcements on the Net.

Doug somehow managed to squeeze time for DIGEX by juggling his schedule between tandem offices in Virginia and Maryland, while Mike had worked a variety of jobs in the broadcast field, including 12-hour shifts of babysitting a satellite data link in a communications van located on top of the Central Command bunker during Desert Shield and the first three days of Desert Storm. Doughney had been trapped inside Saudi Arabia when the war broke out, finally getting a ride back to the states on a nearly empty C-141.

Over the next two years, DIGEX's four-line configuration grew into 12 lines before Bell Atlantic said, "No more," claiming they wouldn't/couldn't put more dial tone capacity into a residence. At the same time, the UUCP dial-up connection between Greenbelt and UUNET continued to move increasing amounts of data as the customer base, and the size of Usenet newsgroups, increased.

After much searching, DIGEX found a new home above the Beijing Inn Chinese restaurant in Old Greenbelt at the shopping center along Centerway Drive in a cluster of post-Depression-era, solid concrete buildings with cheap, available, and vacant commercial space. Bell Atlantic would begrudgingly put in more dial tone and even the ultimate in high-speed connectivity circa 1993—a T-1 line. The 7-11 across the courtyard would provide Super Big Gulps and burritos to fuel late-night hack jobs while the Old Greenbelt Theatre contributed entertainment in the form of dollar movies.

Nobody really had time to go to the movies.

DIGEX, like the rest of the Internet industry, moved smack into the commercial world in 1993. Doug and Mike both quit their day jobs and moved all the gear into the Beijing space by March 1993. The payroll moved from three people (Doug, Mike, and Rob Seastrom) to nearly twenty by the end of the year,

DIGEX facilities circa 1993 above the Beijing Inn Chinese restaurant.

including systems manager Ed Kern, help desk/technical writer Lisa Losito, and sales associate Doug Mohney. DIGEX got a T-1 from ANS, set up the first commercial web hosting machine, and went to a multiple machine architecture to support large numbers of dial-up users.

After much cajoling, threatening, and screaming, Bell Atlantic finally bowed to the inevitable and brought fiber into our facility so we could stop depriving the rest of Old Greenbelt of second phone lines—we'd sucked up over 80 lines and Bell Atlantic had stopped provisioning our orders for 20 more, so we forced the issue and ordered another 100.

In many ways, our rapid growth problems throughout 1993 presaged many ISP and online services' woes in the years to follow. First, we ran out of sheer telephone capacity and had to fight with the phone company to install more. Once we killed the busy signals, we had to add faster, and more, CPUs to keep the dial-up customers happy. Unfortunately, our multi-CPU upgrade in December took us off-line for over eight hours, eight painful hours in which the phones started ringing at 8 a.m. and didn't stop until about 3:30 p.m., when the systems staff finally brought up our cluster of Sun 4/440s.

Rapid growth also threatened us in another way. We were in a classic cash trap, with plenty of paying customers but never enough dinero to expand rapidly to meet the increasing demands of the exploding Internet market, both in dial-up and dedicated services. Over the long run, we'd either be big, we'd be bought, or we'd be dead. Humphrey put on his dancing shoes and stepped out on the town, looking for investors who could hand us bridge funding and set up a deal for a larger pot of venture capital.

1994

After several false starts, DIGEX signed a deal in March 1994 for **$400,000** of bridge capital from Armada Associates. More importantly, we gained the support and advice of Bob Stewart, one of Armada's partners. In the months and years to follow, Bob proved to be the rarest of commodities in the investment world—an honest, sympathetic man with saintly patience.

Bridge money put us in the pro-active zone temporarily, allowing us to build dial-up facilities in anticipation of more load instead of reacting to an influx of new customers. It also allowed DIGEX to embark on another round of hiring, boosting our staff count up to 30 people, including more technicians. Our long-desired expansion to other cities, including Baltimore, Philadelphia, and New York City, could move forward as we built ourselves into a regional power.

While the search for Victor Charles—Venture Capital—took place, DIGEX's rapid growth didn't go unnoticed by our once skeptical telecommunications vendors. We'd quickly become one of Bell Atlantic's first and most aggressive

Chief operating officer Clyde Heintzelman with the sales staff.

Frame Relay users and even Cable & Wireless finally figured out we were real, between our bills for long-distance leased-lines and our ever-increasing quote requests to places far away from the Maryland burbs. Both Bell Atlantic and Cable & Wireless made noises about buying us in our naive youth.

At the end of the year, DIGEX's Christmas party was held in its "new" facility at 6800 Virginia Manor Road in Beltsville, Maryland, barely a 15 minute drive from our old digs. The former occupant of the 30,000-square-foot building had been the National Rifle Association's mass mailing facility, so it was complete with 8,000 square feet of computer room, raised floor and a back-up diesel generator. The party was catered to include the 40 employees on payroll and their spouses.

As we closed out the year with **$1.57 million** in sales, our growth attracted attention from around the Beltway. In Fairfax, UUNET sat watching us, driving Rick Adams to sneer at our existence. At a UUNET staff meeting, he said that we'd never amount to anything. Another competitor was suggesting we were soon to go bankrupt.

Competitive intelligence in those days was very much a game of liar's poker. We'd call up UUNET, PSINet, and all the little guys around the Beltway, tell outrageous lies about needing a T-1 or T-3, give the appropriate area code and exchange, then wait for a fax to come across our machines. I nearly ended up faxing our sales list over to PSI, but the brilliance over there hadn't changed the ID on their fax machine from "PSI - Herndon" and WinFax was kind enough to put up the ID on my PC's screen quick enough so I could mash down on the "Cancel" button and flush the outbound document. On another occasion, I got a forwarded e-mail of a customer quote with a strangely familiar phone number which I'd seen on a web page only a few days before. A quick "whois us.net" verified my hunch. One of my phone calls into UUNET put me on the line with a sales engineer named Steve Shippa who had worked for my first leased-line customer and had quit his job for the better life in Fairfax.

1995

As we turned the corner into 1995, Humphrey and the folks at Armada had set up a deal for venture capital money, high octane fuel to take us to the mythical "next level." By this time, it was pretty apparent that DIGEX needed to build a T-3 backbone along the East Coast and a high-quality sales force, as well as the personnel and tools necessary to support quality Internet service for business customers. While dial-up customers provided nice, steady income, there was no way we wanted to compete with the likes of America Online and CompuServe over the long-run. They had established name recognition and a hell of a lot of cash for marketing to the consumer world. Humphrey made the key philosophical decision to focus all efforts on the business-to-business market of leased-lines and web server hosting and not get into a dial-up war. It proved to be all too wise as PSINet and others discovered.

Our deal for **$4 million** in venture money was sealed on the footsteps of UUNET and PSINet going public in March. The cash was coughed up by Grotech, Venrock, and Massey-Burch. Grotech, the lead vendor, was based in Baltimore. Venrock represented old money, the Rockefeller venture funds while Massey-Burch came out of the south, in Memphis. The final negotiations were long and frustrating for all sides, between the different demands of Armada Associates and the oh-so-slow movement of legal review.

Taking venture money has been equated with various forms of evil, depending on the terms and conditions of the deal in exchange for cash. From a cold, analytical standpoint, the venture capital firm is betting their group's money on the financial success of the company. The VC gets stock—a whole bunch of paper representing a percentage ownership in the company—in exchange for cash to grow the company, with an eye to an eventual "exit strategy," a way to turn the paper into real money or something close to money, such as a publicly traded stock which can be shoved into a portfolio or sold for cash. Due to the amounts of stock given, VC would also have representatives elected on the corporate board of directors, a steering committee for the which would select executive management for the company.

Equating VC as the devil incarnate is an overpersonification; VC firms are economic animals driven by the maximum return on investment. If it doesn't weigh into maximum return on investment, it isn't worth talking about. So long as DIGEX kept growing the numbers of customers and revenue while moving toward an eventual goal of either being bought out or going public, the VC would leave us alone, sated by forward progress. Stop moving, and the VC would make changes. Nothing personal, of course, but high-risk investments can require drastic measures, after all.

All of these aspects were far from our minds as we celebrated the marriage of Doug Humphrey to former DIGEX employee #7, Lisa Losito, in May. (Lisa had left DIGEX for the Electronic Newsstand in October 1993 to make room for me on payroll.) The wedding party was a cultural stew of VC money people, Doug and Lisa's friends from the Markland Medieval Recreation Society

Mike Dougherty models the DIGE-X-files T-shirt.

complete with their swords, long-haired DIGEX employees, and the irascible systems lord Ed Kern who wore Birkenstock sandals as he always did, rain or shine.

One of the bigger shifts in DIGEX culture and direction came with the hiring of Clyde Heintzelman as chief operating officer in June. Clyde was a hard-core telco man, having worked his way up the ranks in Bell Atlantic. In his 28-year career, he was vice president of sales and marketing for the Bells in Maryland, Virginia, DC, and West Virginia; the general manager for the Directory division of Bell Atlantic Yellow Pages; and he established the company's Federal Systems Division. His signature work was the "9 out of 10" campaign for Bell Atlantic Yellow Pages. In the eighties, the Yellow Pages found themselves under assault from the R.J. Donnelly company and its "One Book" directory. The "9 out of 10" campaign swept through cities on TV, baseball caps, and with an airplane-towed banner, capping it off with the signature voice of James Earl Jones.

More importantly, Jim McDonald—our telecommunications manager at the time, a Vietnam-era United States Marine, ex-Bell Atlantic technician, he who survived the worst which the North Vietnamese had thrown at him, and hardly knew fear about anything—feared Clyde.

Clyde moved in and took charge, calling 8 a.m. meetings and shuffling around people to meet the all-important goal of more customers and more revenue. Some people were fired, while others were reassigned to new jobs as new hires came in. Many old-time employees were resentful that new hires were coming in at higher salaries and appeared to be working less than 60- to 80-hours per week.

Still, Clyde's first run at a dress code was shot down in short order. DIGEX employees who didn't have to go out on sales calls managed to keep their t-shirts, jeans, long hair, leather jackets, and visible piercings. The two video games and the pinball machine in the lunch room remained as well.

Over the summer, everyone went through a period of adaptation, as we continued to add leased-line and server customers, brought in with a combination of enthusiasm with our new sales force, Clyde's intensity in motivating the sales force, and, to some extent, due to the failures of our competitors. Both UUNET and PSINet went through periods of time where their customers weren't happy with the response from a sales rep or when they had something break and couldn't get a technician on the phone to get their problem fixed post haste.

Clyde's contribution to the core values of DIGEX was the belief in delivering quality customer service, the sort of quality of customer service which was religion by true believers at Bell Atlantic. Making the customers happy and keeping the customers once we had them made a lot of sense, and it was an aspect which both our regional and national competitors had failed to master.

At the same time, we started to win more name customers, including the University of Maryland, Barbados External Telecommunications, and a satellite circuit into Tblisi, Georgia in the former Soviet Union. As part of a contract in cooperation with US-AID and another group, we would help install the Tblisi circuit, send over personnel for training and then turn over the working facility to a local working group. The theory was if the Georgian legislature had access to the various bodies of law over the Internet, then they would be able to learn by example to establish and affirm the rule of law in their own emerging democracy.

Rob Seastrom, back on DIGEX payroll after a stint which took him through Sprint International and InterCon software, was our frequent flier during the summer of 1995. In addition to the Tblisi circuit, he made trips to the northern arctic shore of Canada to support former MTV VJ gone cyber Adam Curry and his crew for the Internet broadcast of the Molson Ice Beach Party on Labor Day weekend, and to Vegas (again with Curry) for a broadcast of the Tyson comeback fight.

The fall of 1995 brought a number of turning points for the company. Stock options, the gold at the end of the rainbow for so many of us who had sweated 12-hour days above the Beijing Inn, were finally issued to all employees on payroll. We'd all heard the stories from our friends/competitors at UUNET of nickel options and millionaire payoffs, and everyone under the roof of 6800 Virginia Manor road wanted the pot of gold.

Perhaps the most significant event during the fall of 1995 was the seemingly innocuous purchase of InterCon Software by PSINet. InterCon Software owned 80 to 90 percent of the rapidly shrinking Mac TCP/IP software market, and its purchase was suppose to allow PSINet to offer a "soup to nuts" Internet service with dial-up connectivity and software to customers.

PSINet came into the InterCon office in Reston with an iron fist, sucking out the elite little company's morale in a matter of weeks. Most InterCon employees were extremely disappointed with their stock options from the sale, which amounted to less than 1 percent of the company's worth divvied up among over 90 percent of its employees and started looking for other jobs.

DIGEX was hiring—a fresh start for the jaded employees. Six out of ten of the InterCon sales staff departed within a week, leaving behind PSINet's nightmare takeover for a clean slate. The migrant's doubts were sealed in a company-wide meeting in which Bill Schrader started badmouthing a departed employee and DIGEX.

"Where does he think he's going, over to DIE-gex, that jerk? DIE-gex is going nowhere, and they're going to be nothing," Bill ranted. (The departed employee, Ian Brown, ended up as vice president of sales for the Business Connectivity Group at DIGEX.)

Ian and the other InterCon refugees set up a "Blitz Team" to attack new cities as we opened them, working to immediately sign up customers and generate revenue. The Blitz Team rolled through Pittsburgh and Boston before the end of the year, driving sales numbers to a new record high of **$10.7 million** booked revenue by the end of the year.

Christmas Party 1995 marked DIGEX with over 100 people on staff and everyone under one roof. Between the growth in sales, support, and equipment, we'd outgrown the space at 6800 and ended up swallowing up a good chunk of 6900 across the street. The space at 6900 would hold our rapidly growing sales force as we continued to expand.

Christopher McCleary and Doug Humphrey.

With Wall Street's blind infatuation with Internet stocks, fed in part by Netscape's rapid ascent to **$150** per share, the future was nova bright. UUNET's stock danced to the 90s and even PSINet managed to climb to the mid-20s. Certainly, sanity would return and stocks would drop to more reasonable levels, but even a DIGEX could be capable of big money, couldn't it?

Another change was marked in the search and acquisition of a new chief executive officer. Since the founding of the company, Doug Humphrey had held the reins, but the VC wanted a professional business face in the driver's seat in the charge to an initial public offering, someone who could walk down Wall Street and talk the investor talk.

1996

The Board found their man at the end of January, one Christopher McCleary, previously employed at American Mobile Satellite Corporation, as vice president-general manager of AMSC's Satellite Telephone Service on the same day AMSC made their first satellite phone call through their own bird. The Ventures loved his heavy involvement in AMSC's **$200 million** IPO.

McCleary was anointed to be The Man to take us to "the next level." Humphrey would remain as chief technology officer. Ironically, PSINet announced the resignation of founder and CTO Marty Schofstall the following day.

March fell into the "may you live in interesting times" category. DIGEX Internet broadcasted audio and video from the White House Conference for Youth, Drug Use, and Violence at my alma mater, Eleanor Roosevelt High School. Speakers included President Clinton, Vice President Gore, Maryland Governor Paris Glendening, and Reverend Jesse Jackson. While Tom Edwards and I were sitting in the middle of a cramped lightening booth in Roosevelt's auditorium, our cybercast was viewed back at 6800 Virginia Manor road by DIGEX's latest set of suitors, MFS.

MFS put an offer of around **$60 million** on the table. It was a tad low, so it was turned down. Of course, MFS turned around and blew close to **$2 billion** in stock on UUNET by

May. They were, in turn, gobbled up by WorldCom. I have to throw up my hands and stop wondering about what MFS/DIGEX/-WorldCom stock might have been priced at.

We had other flirtations as well, from Prodigy and CompuServe, each seeking to buy an answer to their problems of understanding the Net as a force which would eat them alive. Prodigy came and left rather quickly, but CompuServe made several visits to Beltsville before deciding they would do an IPO and build their own expanded business network. I'd felt we'd dodged a bullet; CompuServe had bought out Spry for **$140 million** and made the Internet services company vanish into thin air within 12 months. With a little money, Spry could have given ISPs heartburn in leased-line services. Instead, all that remained of Spry was a web server farm outside of Seattle.

At March's monthly all-hands meeting, Chevy's Mexican food was dished out as McCleary put forth his vision for the company. We would raise one last round of financing so we could finally build the national T-3 network we'd been talking about for the last six months, expand from 15 to 20 East Coast cities to 50 cities around the country and become a national power to kick ass and take names.

Further, the company was going to be organized into separate business units, each unit to focus on a different product line. Business Connectivity would handle leased-lines, Web Server Management Group would deal with server hosting and collocation, Private Networks would sell DIGEX services to folks who wanted to sell Internet under their own brand name.

As we built the national network (Network: A backbone can be snapped and broken at a single location, while our network had loops and dual T-3s into all major cities for that quality of service which Clyde continued to strive for within the Business Connectivity group), plans kicked into high gear for a mid-summer initial public offering. The Private Networks group secured deals with LCI Communications, WinStar, and Orion Atlantic, boosting our portfolio to prospective investors.

Regrettably, four weeks before our projected summer IPO date, all of Wall Street had what is euphemistically called a "correction." In the language of the Americans, stock prices took a dive. For five days in mid-July, both the Dow and all the tech stocks on NASDAQ had their worst days in two years, dropping down, down, down and taking with them our dreams of going public.

Our once enthusiastic underwriters, Salomon Brothers and Montgomery Securities, got a severe case of cold feet. Investment fund managers went into defensive mode, pulling money out of stocks and putting it into slow growth, nice, safe CDs and T bills. Funds for IPOs, at an all-time record high in June 1996, evaporated like so much smoke, as money managers went conservative, not sure how fast or how far the labeled "correction" would take stock prices.

Initial public offerings, require two factors. A financial investment house, the underwriter, agrees to sell the stock of the company which it represents and to back the price of the stock for a certain period of time. Secondly, buyers for the stock must be found, typically other investment firms which are sold on the "story" surrounding the IPO and are willing to put out the cash to buy chunks of the stock.

Needless to say, company morale took a great kick in the teeth as the correction worked its way out of Wall Street and we waited for the market to pick back up. And waited, and waited, and waited, as July went into August and August slipped into September.

"Oh, we'll do it when the market picks back up," Salomon Brothers said, "Probably first quarter of 1997 at the latest." While we waited, both WinStar Communications and ACSI started flirting with us, wanting to snap us up at a bargain as we waited for the winds to shift.

However, Friedman, Billings, and Ramsey (FBR), a spirited investment banking firm in Washington, DC, didn't think we had to wait. After looking over the market and the original "Red Herring" so carefully crafted by Salomon Brothers, FBR stated they could take us out on the Street in a month. After all, the due diligence (i.e. Are the books legit?) work and the heavy lifting was done. All the board of directors had to do was to give the green light.

Goodbye Salomon, hello FBR!

At the beginning of October, McCleary and the executive VPs packed their bags to go on IPO "Road Show," a two-week

whirlwind tour of investment bankers in Europe and the United States. The road show is the ultimate sales job, convincing skeptical bankers to part with large amounts of their customers' cash in exchange for stock in a young company without a track record. More importantly, the greater the sales job, the more pent-up demand for the stock and the higher the initial price for trading.

October 16, 1996 was the acid test for McCleary's sales job, as NASDAQ symbol DIGX would start its first day of trading. The face value of the stock was set at **$10 1/8** and the company held its breath as we waited for the first reports to come in. Sure, some analysts had picked us to climb 10 to 20 percent the first day, but these were the some of the same people who thought that shares of PSINet were going to be worth $50 by the end of the year.

DIGX stock started trading at **$11** per share and quickly climbed to **$12 3/4** by the end of the first day, an unqualified success by any reasonable measure as we put **$38 million** into the bank and started paying off all the bills we'd racked up in constructing our national T-3 network.

1997

Through the end of the year, the stock price stayed within a steady range of **$10** to **$13** per share. We had more than adequate reason to celebrate at the company's 1996 Christmas party with over 300 people on payroll, **$15 million** in total revenues to close out the books, the purchase of a Boston web shop for high-end server work, and plenty of nice customers, including Southwest Bell. We even had "DIGE-X files" black t-shirts made with "I want to believe" printed on the back.

Still, our rapid growth had taken its toll into 1997. Frantic hiring over the past year didn't mean you really *knew* anyone and the problem was only exacerbated as we slowly climbed up to a body count of 430 people, at least a third which had been in their jobs and on payroll for less than six months. The essence of a close-knit family, the long-standing belief that our existence in life was to prove all the nay-sayers over in Northern Virginia dead wrong had gone away, faded along the way from faith in the cause to mere jobs in the corporation.

March winds brought a further downturn as another stock market "correction" pushed DIGEX to below **$7** a

Doug Humphrey at the IPO party.

share, an all-time low price and a numbing move downward from the **$10** to **$12** range we were all so used to. By the time we were able to exert our stock options in mid-April, the price had inched back up to **$8** per share, but it was disappointing in comparison to our humble high of **$12 3/4** in the fall.

Rumors once again started flowing about DIGEX buyers, but out of all of the names tossed around in the hallways, only one returned time after time, a Tampa, Florida-based CLEC (competitive local exchange carrier) called *Intermedia Communications* (NASDAQ: ICIX). Anyone in the company could tell they were serious when they continued to visit us. Most prospective buyers kicked the tires; Intermedia looked under the hood, checked the oil, and asked when the last time was we had done any brake work.

A DIGEX/Intermedia merger ground through the rumor mill from April to May. Intermedia had cash in the bank to spend, a total of **$460 million** from an outrageously successful stock offering in the fall and the willingness to spend it over swapping stock in an acquisition. Heavy speculation came on an announcement being made at DIGEX's first annual stockholder's meeting on May 21, but it and a much-hyped all-hands meeting afterward left anyone who'd bet on a proclamation of fidelity out of luck.

However, the CEO and various other executives were nowhere to be found at least one or two days a week in the three weeks to follow, with contact numbers in Tampa left for subordinates in case of emergency. And slowly, the rumor mill, once pumped with daily updates, slowly ground to a halt on Monday, June 2, with nothing more on Tuesday.

Wednesday, June 4 1997: The hint of something big going on. That afternoon, key personnel had vanished to a hotel at Baltimore-Washington International airport for an "emergency meeting." Hmm, emergency meeting + sudden quiet + CEO out of office over the past week = Potential vote on acquisition by the board of directors?

Thursday morning, June 5, 1997: The first news hits the wire, and it's straight out of the horse's mouth, Intermedia, in a Business Wire press release carried on Yahoo. DIGEX and Intermedia agreed to merge in a **$13** per share cash deal which valued DIGEX at around **$150 million**. Not too shabby for a company which made **$15 million** at the end of 1996.

Further, Intermedia wasn't shy about how DIGEX fit into their master plans to conquer the world; ...er...expand their business offerings. In a morning press conference, they'd managed to make Wall Street happy enough to boost ICIX stock up **$2** per share. Normally, the larger company in a merger watches their stock price go *down* as the smaller company's stock price goes up. Intermedia and DIGEX shared the same customer values, and Intermedia would probably use some of their cash in the bank to expand DIGEX Internet operations more rapidly.

Where now, DIGEX? For the short-term, it's not business as usual, but business accelerated as DIGEX and Intermedia work together. Everyone in Beltsville will stay in Beltsville and the total head count in Maryland will increase in conjunction with expanded operations. Both companies share the same commitments to customer service, so they'll be little disagreement on that value.

As for the long-term, who knows? It's not my place to speak for the company, and anyone who tries to make predictions about the Internet market more than twelve months out is on crack or works on Wall Street (or both, of course). I'm going to spend the next three months walking off the wooziness from a nearly four year rollercoaster ride which started for me in a little dingy office above the Beijing Inn and ended in a **$150 million** corporation. ◆

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Steve Stroh learned wireless TCP/IP networking as an Amateur Radio operator (callsign N8GNJ). He's one of the founding members of the *Puget Sound Amateur Radio TCP/IP Group* and is Secretary for *Tucson Amateur Packet Radio (TAPR)*, a national not-for-profit amateur radio research and development corporation that specializes in wireless digital communications.

Professionally, he's a NetWare and Windows NT administrator for a large company. He's done battle with UNIX a few too many times and mostly lost, so now he's learning Linux and BSDi in preparation for his next UNIX challenge. Steve lives in Woodinville, Washington (in the shadow of Redmond) with wife Tina and daughter Merideth. He can be reached at `steve@stroh pub.com`.

Ahhhh... I'm back from the Dayton Hamvention. My family tells me that I'm a lot more pleasant now that I've gotten my "Hamvention Fix" for the year. Hamvention was fun, as always, and the weather this year was unusually agreeable. At a previous Hamvention, one enterprising flea market vendor did very well selling a trailer of military surplus ponchos. The flea market was, as always, incredible. While my friend Craig and I walked the flea market, I explained my "seen one of everything I've worked with" statement to him. He mentioned that we hadn't seen any Sinclair computers...and we saw one within minutes.

The big news at Dayton was the introduction of the Kachina 505DSP Computer-Controlled HF Transceiver. Typical amateur HF transceivers have complex front panels with numerous knobs, switches, connectors and displays. The 505DSP dispenses with the front panel completely, replacing it with Windows 3.1 or Windows 95 software. Audio to and from the transceiver is via an auxiliary panel sized to fit into a half-height 5.25" drive bay. For more information on Kachina and the 505DSP, check `www.kachina-az.com`.

Another big announcement at Hamvention '97 was a joint development product between TAPR and PacComm packet radio Systems — the APRS Microphone Encoder. APRS stands for Automatic Position Reporting System which combines a global positioning system (GPS) receiver with radios and allows a person or vehicle to continuously, automatically broadcast his/her/its position. Those receiving the transmissions can automatically plot APRS systems on electronic maps in near real-time. APRS has been enhanced to monitor some specific weather monitoring equipment. When APRS stations are plotted, weather information can also be displayed. Originally APRS software ran only on DOS, but it has been ported to the Macintosh, Windows 3.x, and most recently Java. APRS "transmitters" typically require a Terminal Node Controller (TNC) — the radio equivalent of a modem — which in turn require a computer to configure. If you wanted to change an APRS broadcast interval from 5 to 10 minutes, then you had to fire up a computer to make that change. The Mic-E is a more elegant approach to APRS transmitting. It's a self-contained unit that takes the place of the TNC when transmitting, and has knobs that control key parameters of an APRS transmission. The APRS has numerous commercial applications. For more information on APRS, check out `www.tapr.org/tapr/html/sigs.html` and browse the section on APRS. For more information on the Mic-E, check out `www.tapr.org/tapr/html/mic-e.html` (amateur radio version) and `www.paccomm.com` and follow the GPS links (commercial version).

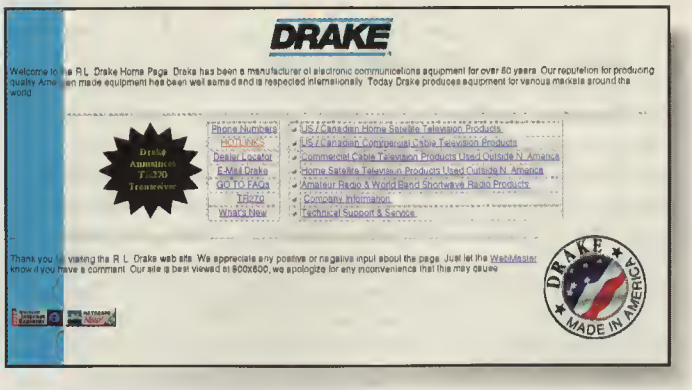
PacComm Packet Radio Systems

A future TAPR project that didn't quite make it to Hamvention '97 is the Totally Accurate Clock (TAC). TAC is the invention of Tom Clark, a NASA Scientist and amateur radio operator W3IWI. Tom realized that the GPS satellites transmit a sufficiently stable time reference that could be combined with a reasonably stable, accurate stand-alone clock to achieve a low cost, very highly accurate clock. By itself, the GPS signal isn't sufficient because adequate coverage by GPS satellites isn't always available. A stand-alone clock eventually drifts and has to be recalibrated frequently. The conventional solution for high-accuracy timing is to use a highly stable time reference, which costs tens-of-thousands of dollars. The TAC combines the low cost and continuous availability of a stand-alone clock with the accuracy of GPS signals. The combination of the two systems should make it possible for TAC to achieve timing accuracy that previously required laboratory-grade equipment. For more information on TAC, check out `www.tapr.org/tapr/html/tac2.html`.

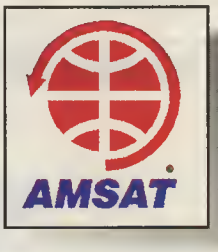
Although not an amateur radio product, PacComm displayed a self-contained remote weather monitoring "node." The unit contains a solar panel (and presumably battery and charging controller), weather station, GPS receiver, TNC, a radio transceiver, and omnidirectional antenna. The system was assembled from off-the-shelf components and, therefore, should be relatively inexpensive. It should also be relatively inexpensive to operate since no expensive power or telephone lines are required.

PacComm also displayed an extensive line of commercial packet radio products. Typically these products are used in conjunction with commercial two-way radios. In one case, a PacComm packet radio controller was developed to integrate directly inside a particular model of two-way radio — no external box! PacComm's web page is `www.paccomm.com`.

Another vendor of packet radio products at Hamvention was Kantronics. Kantronics also manufacturers commercial packet radio products. The Kantronics KPC-9612 (amateur radio product designator) has a unique feature. When used with an appropriate radio, it can transmit industry-standard paging tones for both numeric and alphanumeric pagers! Kantronics' web page is `www.kantronics.com`.



A well-respected U.S. radio manufacturer returned to the amateur radio market at Hamvention '97. The R.L. Drake Company's products were well respected when Drake decided to exit the amateur radio market more than ten years ago to concentrate its efforts on the satellite video receiver market. The Drake TR270 that was introduced is intended to be used with the numerous amateur radio digital satellites currently in orbit, as well as the ambitious amateur radio Phase IIID satellite scheduled for launch this year. R.L. Drake's web page is `www.rldrake.com`. Information on the Phase IIID and other amateur radio satellites can be found at the Amateur Satellite Corp. — North America (AMSAT-NA) web page at `www.amsat.org`.



Radio engineering talent is rare, and expensive for those companies that need it. There were numerous companies that were recruiting at Dayton, including Mission Aviation Fellowship (MAF). MAF is a religious organization that supports missionaries in developing countries. Originally, MAF provided aviation support, but expanded its mission to include communications such as an e-mail system which connects missionaries in much of the third world to the Internet. MAF makes effective use of amateur radio (and some non-amateur) low-bandwidth wireless digital communications technology in its e-mail system. MAF was at Dayton to find people, interested in its mission, with these particular skills. I'll describe these skills as a typical e-mail system administrator, with experience in data communications over radio, and unusually self-reliant and resourceful. If you're interested in MAF, then check it out at `www.maf.org`.

And now, for the obligatory non-amateur radio topics. It's been another good month for wireless Internet. Hughes Network Systems (HNS) introduced DirecPC Enterprise Edition (DPCEE). In contrast to the existing DirecPC system, DPCEE uses a ground-to-satellite uplink (DirecPC requires a conventional Internet connection for the user-to-Internet link). DPCEE uses Hughes' Very Small Aperture Terminal (VSAT) technology at data rates up to 24 Mbps. One of the primary uses of DPCEE will probably be IP Multicasting for distribution of data from a central system to multiple remote locations. Pricing for DPCEE, and areas of service weren't mentioned. The DPCEE press release can be found at `www.hns.com/News/Press/dpcee.htm`. If the pricing is not too absurd, then DPCEE could be a good fit for those desiring high-speed Internet access in remote locations where conventional access isn't available.

The biggest announcement in wireless Internet access is that Teledesic, the "Internet in the Sky" project backed by Bill Gates and Craig McCaw, announced that they have selected the Boeing company as the system integrator for the Teledesic network. Boeing will also become an equity partner in Teledesic by paying up to $100 million for 10 percent of the current ownership of Teledesic. The selection of Boeing was generally viewed as very good news. Skepticism has been expressed that Teledesic wouldn't be able to meet its ambitious timetable to launch 840 satellites into orbit and begin service in 2002. Boeing is very strong on system integration and managing numerous subcontractors. Although Boeing is known mostly for its commercial aircraft, it has been active in space since the very early days of the U.S. space program. In addition to being the prime contractor for the international space station, Boeing has recently purchased the aerospace operations of Rockwell (builder of NASA's Space Shuttle), and has announced Sea Launch, a project that plans to launch rockets at sea from a converted oil drilling platform. All this in addition to an announced merger with McDonnell-Douglas, which is a company that has extensive space capability. Suffice it to say that the Teledesic has a much better chance of success now that Boeing is on the team.

Teledesic plans to provide low-latency voice, data, and video communications at speeds up to 2 Mbps anywhere on earth. The ground station is expected to be a small terminal much like current digital satellite system (DSS) "pizza dish" antennas. Teledesic received a license from the Federal Communications Commission, in March 1997, for the use of frequencies that it needed for its network to operate. Teledesic's web page is `www.teledesic.com`, and Boeing's web page is `www.boeing.com`.

Another interesting "Internet in the Sky" announcement happened recently with Sky Station International also receiving a license from the FCC for the "Stratospheric Telecommunications Service." Sky Station plans to put a minimum of 250 "Sky Stations" at 20 to 30 kilometer altitude in a stationary location over major cities. The Sky Stations maintain their positions through the use of "proprietary propulsion systems" powered from a large array of solar panels. Sky Station intends to provide very low-cost, wireless telecommunications to both fixed and mobile users at speeds from 64 Kbps to 155 Mbps. Sky Station's web page is `www.skystation.com`.

A little closer to earth, Metricom has made a few announcements of interest. The Ricochet wireless Internet access service is available only in three major metropolitan areas and selected university campuses, corporate campuses, and airports. Metricom has signed a memorandum of understanding with KeySpan to invest in a joint-venture company to market the Ricochet service in 16 states, including the cities of New York, Detroit, Philadelphia, Chicago, and Boston. Metricom has announced a second generation wireless modem, the Ricochet SE. The SE is slightly smaller than the original Ricochet wireless modem, works up to 12 hours on its internal battery, and has a liquid crystal display (LCD). Metricom has hinted that there are "future applications" for the LCD, including a "message waiting" indicator. Metricom is "repackaging" the original Ricochet wireless modem into a "fixed" model (includes a wall mounting bracket, AC adapter, and longer RS-232 cable, but no battery), an "economy" wireless modem (lower cost than the new Ricochet SE), and a LAN access wireless modem. The LAN access wireless modem appears to be nothing more than a Ricochet "sanctioned" method of connecting a Ricochet modem to a remote access server (Windows NT) or other communications server to allow Ricochet users to connect directly to those systems (connecting entirely within the Ricochet network instead of via the Internet or "dialing out" using the Ricochet Telephone Modem Access service). The Ricochet IP Gateway is intended for large users of the Ricochet network and provides a direct connection between Ricochet's (wired) network and a corporate LAN or WAN. Metricom's web page is `www.metricom.com`, the Ricochet network's web page is `www.ricochet.net`, and KeySpan's press release on the Metricom-KeySpan MOU is at `www.bug.com/pressrl/metricm.htm`.

Recommended Reading:

3001 : The Final Odyssey, by Arthur C. Clarke.(Published by Del Rey, copyright 1997, ISBN 0345315227) Arthur C. Clarke's latest book, the final book of the series that started with *2001: A Space Odyssey* — need I say more? I enjoyed the book, and although Clarke himself admits to inconsistencies with the earlier books in the series, on the whole I felt that *3001* is a worthy successor to the earlier books. I particularly enjoyed the idea of the "surface to GEO" towers (for the incredible wireless communications possibilities, if nothing else), and the method used to terraform planets in our solar system (just keep dropping icy comets onto hot planets until water accumulates and cools them off sufficiently for habitation). My one criticism of *3001* is that I would have enjoyed more technical detail, and given Dave Bowman's engineering background, I think more detail would have been appropriate for the storyline. If nothing else, *3001* gave me some hope that the human race may yet become more rational and sane, and thus survive to actually see *3001*, let alone thrive on other worlds. ◆

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ISP TECH TALK by Avi Freedman

ETHEL THE AARDVARK GOES BGP ROUTING

In this exciting column we'll actually walk through configuring a Cisco router for BGP. It's very important, however, that you look through June's column (which has 7 pages of background information on BGP) — and preferably May's column, which talks about multihoming without BGP, before you think you're ready to configure a router to speak BGP.

Avi Freedman started Net Access, the Philadelphia area's original ISP, in October of 1992. Net Access is currently a regional ISP, with more than 80 downstream Internet providers and dedicated-line customers, and thousands of dial-up and web-hosting customers.

Avi owns and runs Net Access USA, newsread.com, and shellaccounts.com, which offer services to ISPs nationally and internationally.

Avi has been very active on the inet-access mailing list and is a vocal proponent of the continued viability of startup and existing ISPs. He is also on the ISP/C Board as Director at Large. ISPs can join inet-access by sending e-mail to `inet-access request@earth.com` with SUBSCRIBE in the subject. Avi can also be reached at `freed man@netaxs.com` or **http://www.net axs.com**

A BASIC REVIEW

BGP4, or Border Gateway Protocol 4, is a routing protocol that is used by providers to *announce routing information*. Routes are promises to carry information (IP packets) to a given range of destination IP addresses. BGP4 as we're studying it, is spoken over peering sessions between routers in different networks, or *Autonomous Systems*. Each Autonomous System (AS) has a globally unique *Autonomous System Number* (ASN).

AGAIN, A WARNING

This is dangerous stuff. It's always best if you can test BGP configurations in a "lab" made up of a few Cisco 2501s before implementing them in a live network connected to the Internet, or, if you can, post your network topology and suggested configuration to the *inet-access* mailing list and get feedback on it.

Making mistakes in BGP configuration can "blackhole" — or deny service — to remote parts of the Internet. It's very important that you understand basic IP routing, how to configure your router properly, and at least, the basics of BGP before you set out to configure your router.

Unfortunately, there's no good reference on using BGP to refer people to. Reading the RFCs (the Request For Comment documents that define the protocol at a low-to-mid-level), or even Cisco documentation (Cisco did not invent BGP, but Cisco's BGP implementation is definitely the most widely used) does not really tell you enough. Many of the "routing gurus" out there got started by looking at and working on running networks, where the architecture and implementation were already done. Most of the rest, however, started with the basics, and expanded their knowledge and experience as their networks grew.

Providers should aggressively *filter* their downstream BGP-speaking customers! The best way they can do this is to filter their announcements such that they will only hear certain specific routes from their customers. You may remember major network problems from late April that could have been avoided if any of a number of routers had strict filters installed.

BEING "CONNECTED" TO THE INTERNET: YET ANOTHER REVIEW

Throughout this discussion it's critical to think about what it means to be "connected" to the Internet. To be connected to the Internet, for each host that is "on the Internet," you need to be able to:

- Send a packet out a path that will ultimately wind up at that host.
- That host has to have a path back to you. This means that whoever provides "Internet connectivity" to that host has to have a path to you — which, ultimately, means that they have to "hear a route" which covers the section of the IP space you're using, or you will *not* have connectivity to the host in question.

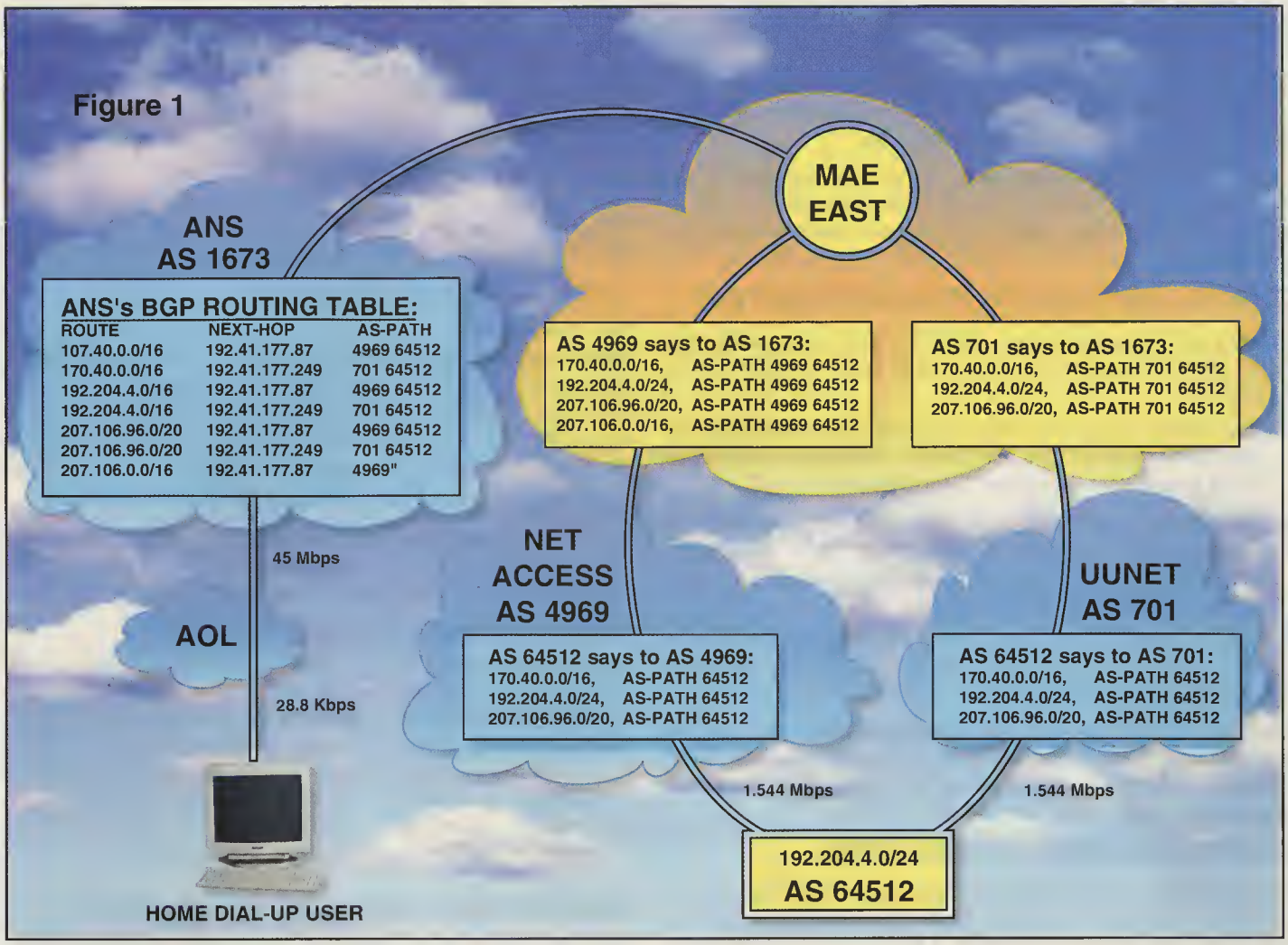
Look at Figure 1. We'll explain more of the details below, but note the "Home Dial-up User." He's connected to AOL, which is served by ANS (AOL owns ANS). We're using 192.204.4.0/24 as an example.

In this example, the reason that an AOL dial-up user can send a packet to 192.204.4.0/24 (for example) is that the ISP (AS 64512) advertised that route to the two upstream providers (AS 4969 and AS 701), who in turn advertised that route to AS 1673 (ANS, which provides IP service for AOL).

Every IP address that you can get to on the Internet is reachable because someone, somewhere, has advertised a route that "covers" it. Similarly, if there is not a generally advertised route to cover an IP address, then no one on the Internet will be able to reach it.

AS-PATHS

Every time a route is advertised via BGP, it is "stamped" with the ASN of the router doing the advertising. As a route moves from Autonomous System to Autonomous System (network to network), it builds up an "AS-PATH." Each route starts out with a "null AS-PATH," represented by the *regular expression* `^$`. See Figure 1— the blocks that show the routes as they move from hop to hop show you the AS-PATH accumulating as the route moves from network to network.



HOW BGP PEERING SESSIONS WORK

When a peering session is established, each router sends all of its BGP routing information to the other router — *unless* "filters" are installed to restrict the information that gets passed. Then, once the initial routing information has been sent, "updates" (new routes being advertised and old, advertised routes, being withdrawn) flow back and forth until the session dies.

AS-PATH FILTERS

We'll shortly give a complete explanation of "AS-PATH filters." For now, we'll just go over the basics and give you the three fundamental AS-PATH filters for basic BGP.

The purpose of AS-PATH filters is to whack out huge chunks of routing information — so that you only send exactly the routes that you want to send.

THE FUNDAMENTAL AS-PATH FILTERS

First, the filter that "permits everything."

```
ip as-path access-list 1 permit .*
```

Second, the filter that "denies everything."

```
ip as-path access-list 2 deny .*
```

Third, the filter that "permits only OUR routes."

```
ip as-path access-list 3 permit ^$
ip as-path access-list 3 deny .*
```

A few comments:

- Don't play around with filters until you know more.
- All filters have an implicit `deny .*` at the end, but it doesn't hurt to put one in for safety.
- `.*` means "match any route."
- `^$` means "match every route with a NULL AS-PATH." The only routes with NULL (or "no") AS-PATHs are routes that are locally-generated.

BGP METRICS (ATTRIBUTES) AND ROUTE SELECTION: INTRODUCTION

Next month we'll go into BGP metrics and attributes, which are parameters associated with BGP routes that allow you to select and change the selection of "the best BGP route" for a certain destination.

For now, keep in mind that unless you do any tuning on your own:

- The most specific route always wins. Whether it's a BGP route or a static internal route, the most specific route always wins.

- If you have to choose between multiple BGP routes, the one with the shortest AS_PATH wins.

If you're multi-homed, then BGP will pick the route with the shortest AS_PATH if both providers offer you what is otherwise the same route to a given destination.

Once BGP picks the best route, it is then eligible to be installed in the IP Routing Table, which is the table that the router consults when making the actual packet-forwarding decisions.

WHAT TO KEEP IN MIND WHEN CONFIGURING BGP

When you're bringing up a new BGP session, or considering how to do BGP in general, the things to keep in mind for each peer are:

- What routes do you want them to hear? The most important thing is to ensure that you do not redistribute routes to which you are not providing "Internet connectivity."
- What do you want to do with the routes that you hear via the session? Do you want to "tune them"? Only take some? Take them all? Do you have the memory and CPU in your router to really do what you want?

For the example in this column we'll explicitly advertise only a few routes, and use AS-PATH filters to deny advertisement of any other BGP routes we may have heard.

For now we'll either deny all incoming BGP routes and use load-balanced default routes, or we'll take the incoming BGP routes, if the BGP-speaking router is capable of it. The latter requires a Cisco with at least 64 MB of RAM.

MULTI-HOMING AND LOAD-BALANCING

Generally, the goal of multi-homing is to use both connections in a sane manner and "load-balance" them somehow. Ideally, you'd like roughly half the traffic to go in and out of each connection. You'd also like "fail-over" routing, where if one connection goes down the other one keeps you connected to the Internet. In an ideal network, you'd be able to have any one of your connections to the Net go down and still maintain connectivity and speed.

We'll talk in the next few months about how you load-balance incoming and outgoing traffic to and from your network. Incoming traffic is controlled by how you announce your routes to the world (packets will flow into your network because someone heard of, and is using, a route announcement). Outgoing traffic is controlled by the routes that you allow to flow into your border router(s) — and is thus much easier to control and tune.

HOW TO ANNOUNCE YOUR NETWORKS: THE KEY TO BGP CONFIGURATION

Once you've decided what you want to do with BGP, it's time to translate those decisions into a router configuration.

The safest way to announce your routes with BGP is to configure everything statically. You can think of the process described below as turning internal routing statements into route announcements. To do this:

Identify every route that you "own" (or are "allowed to" announce).

- Add a static route for it to the Interface Loopback0 with a weight higher than any other static route for that network. Higher numbers for static route weights mean that the routes are less preferred.
- Configure a router BGP clause like the one below, with static network statements to announce your routes, and "sanity filters" in place to make sure you only announce your routes and only take the routes you want.

For example, let's say you're routing the following networks (also called "netblocks" or "prefixes"):

```
170.40.0.0/16 (a /16 has a netmask of 255.255.0.0)
192.204.4.0/24 (a /24 has a netmask of 255.255.255.0)
207.106.96.0/20 (a /22 has a netmask of 255.255.252.0)
```

You'd first configure your router with:

```
int Loopback0
descr Loopback interface for routes to be nailed to.
ip route 170.40.0.0 255.255.0.0 Loopback0 10
ip route 192.204.4.0 255.255.255.0 Loopback0 10
ip route 207.106.96.0 255.255.252.0 Loopback0 10
```

Then, put in your "as-path access-list filters".

```
ip as-path access-list 1 permit .*
ip as-path access-list 2 deny .*
ip as-path access-list 3 permit ^$
ip as-path access-list 3 deny .*
```

Then put in "router BGP" clause.

```
router bgp 64512
 network 170.40.0.0 mask 255.255.0.0
 network 192.204.4.0 mask 255.255.255.0
 network 207.106.96.0 mask 255.255.252.0
 neighbor <somebody> remote-as <their-as>
 neighbor <somebody> next-hop-self
 neighbor <somebody> filter-list 3 out
 neighbor <somebody> filter-list 2 in
```

WHAT THIS DOES: ANTI-FLAPPING MEASURES

One of our goals is to prevent the route advertisements from "flapping" if parts of your network die temporarily. If you are the upstream provider for anyone who's multi-homed, you shouldn't statically announce any routes for them unless you really understand what you're doing. Anyway, to prevent the route advertisements from flapping, we put in backup routes to the Loopback0 pseudo-interface.

This method "statically nails down" the advertised BGP route announcements with the network statements. To nail them down, there must be: (1) underlying static routes with the same netmask as each route being advertised with a network statement; and (2) those underlying static routes must not go away.

The purpose of the Loopback0 routes is to ensure that even if an existing primary route which matches the netmask of the route being announced (and this is often not the case) goes away, the Loopback0 route (with a weight of 10, which means it's only a backup route to any route without a weight at the end) will kick in and keep the BGP route advertisement stable. Loopback0 routes always stay installed since there's no physical interface to go down and cause the route to be withdrawn — the interface Loopback0 will always be up, so the routes pointed to them will always be installed. NOTE: If you are already using Loopback0, then pick another Interface (Loopback1, Loopback2, etc...)

WHAT THIS DOES: FILTERS

This example uses a "send only our local routes" outbound filter, so it won't accidentally re-advertise one of your upstream provider's routes to the other.

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Here we also use a "deny everything" incoming filter, which will only announce routes and not accept any. If you want to accept all incoming routes, replace the `filter-list 2 in` with `filter-list 1 in`. Actually, you could just not specify an `inbound as-path filter`, and the effect would be the same, but it's better by far to be explicit about these things.

ADDING MORE PEERS

To add more peers, just create another similar neighbor statement. Cisco routers give you 30 seconds to finish typing the neighbor statement before trying to establish the session. It is *critical* that you get those `neighbor somebody filter-list xxx ..` statements entered by then. The best way, by far, to do it is to either cut and paste or tftp in a complete neighbor statement to the router.

THE COMPLETED EXAMPLE

Here's an example of a completely filled-in BGP clause, based on Figure 1.

```
router bgp 64512
  network 170.40.0.0 mask 255.255.0.0
  network 192.204.4.0 mask 255.255.255.0
  network 207.106.96.0 mask 255.255.252.0
  neighbor 207.106.127.45 remote-as 4969
  neighbor 207.106.127.45 next-hop-self
  neighbor 207.106.127.45 filter-list 3 out
  neighbor 207.106.127.45 filter-list 2 in
  neighbor 137.10.10.121 remote-as 701
  neighbor 137.10.10.121 next-hop-self
  neighbor 137.10.10.121 filter-list 3 out
  neighbor 137.10.10.121 filter-list 2 in
```

This says:

- Announce the networks 170.40.0.0/16, 192.204.4.0/24, and 207.126.0.0/18.
- Talk to Net Access (207.106.127.45) and give them only *our* routes (filter-list 3 out) and take no BGP routes in (filter-list 2 in).
- Talk to UUNET (137.10.10.121) and give them only *our* routes (filter-list 3 out) and take no BGP routes in (filter-list 2 in).

Please, even though it isn't required at all times, put inbound and outbound filters, of some sort, on every BGP neighbor session.

CONTROLLING OUTGOING DATA FLOW: "FULL ROUTING" AND OTHER OPTIONS

Next month we'll go into detail and give you examples of many different ways to use the routes you can hear via BGP to tune your outbound data flow.

Briefly, option one is "take everything." With a big enough router, you can take multiple views of the full routing table, and this should give you a somewhat better quality of Internet connectivity than just load-balancing default routes. For each route where there are multiple views, your router will select the best one to use at any time, which is based on AS_PATH length, unless you tune other parameters.

Option two is "take customer routes from each provider." Who can get to SprintLink customers better than SprintLink? No one, if SprintLink's built its network properly. You ask each provider to only send you routes for its customers. If your two providers are not SprintLink and MCI, then you should be able to store those routes and use them even on a Cisco 2501. These routes are also called "peering routes" because the "routing load" that providers who have no customer-provider relationship (i.e. MCI to Sprint, UUNET to ANS) send to each other via BGP. ◆

A SAMPLE ROUTER CONFIG

```
  !
  service password-encryption
  no service udp-small-servers
  no service tcp-small-servers
  !
  hostname jacks-router
  !
  enable secret 5 $1$h7jsdf$k23jMhJ.u5jads0.otE.
  enable password 7 145C1B020D1726
  !
  interface Ethernet0
    ip address 207.106.96.0 255.255.255.0
  !
  interface Serial0
    description T1 to Net Access
    ip address 207.106.127.46 255.255.255.252
    encapsulation ppp
  !
  interface Serial1
    description T1 to UUNET
    ip address 137.10.10.122 255.255.255.252
  !
router bgp 64512
  network 170.40.0.0 mask 255.255.0.0
  network 192.204.4.0 mask 255.255.255.0
  network 207.106.96.0 mask 255.255.252.0
  neighbor 207.106.127.45 remote-as 4969
  neighbor 207.106.127.45 next-hop-self
  neighbor 207.106.127.45 filter-list 3 out
  neighbor 207.106.127.45 filter-list 2 in
  neighbor 137.10.10.121 remote-as 701
  neighbor 137.10.10.121 next-hop-self
  neighbor 137.10.10.121 filter-list 3 out
  neighbor 137.10.10.121 filter-list 2 in
  !
  ip name-server 207.8.186.1
  ip name-server137.39.1.3
  !
  ip subnet-zero
  ip classless
  !
  ip route 0.0.0.0 0.0.0.0 207.106.127.46
  ip route 0.0.0.0 0.0.0.0 Serial1
  ip route 170.40.0.0 255.255.0.0 207.106.96.10
  ip route 170.40.0.0 255.255.0.0 Nu110 10
  ip route 192.204.4.0 255.255.255.0
  207.106.96.10
  ip route 192.204.4.0 255.255.255.0 Nu110 10
  ip route 207.106.96.0 255.255.252.0 Nu110 10
  ip route 207.106.96.128 255.255.255.192
  207.106.96.7
  ip route 207.106.97.0 255.255.255.0
  207.106.96.11
  ip route 207.106.98.0 255.255.254.0
  207.106.96.11
  !
  ip as-path access-list 1 permit .*
  ip as-path access-list 2 deny .*
  ip as-path access-list 3 permit ^$
  ip as-path access-list 3 deny .*
  !
  line vty 0 4
    password 7 0AB41A0C034907
    exec-timeout 0 0
  !
```

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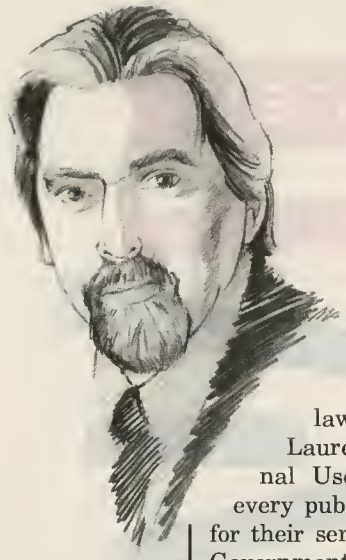

@INTERNET by Thom Stark

CANNING SPAM

Thom Stark is President of **Stark Realities,** an Internet business consulting firm based in the San Francisco Bay Area. He also conducts seminars and tutorials about the Internet at trade shows and for business and user groups. He is the author of the serialized online science fiction novel, *A Season in Methven,* (`www.starkrealities.com/Methven`) and is also a semi-regular panelist on ISP-TV's "State of the Net" cybercasts. Mr. Stark's e-mail address is `thom@starkrealities.com` and he maintains a non-commercial web site which focuses on IP internetworking technologies and policy issues at `www.starkrealities.com`.

I was a Netcom shell customer in 1994 when immigration lawyers Martha Siegal and Laurence Canter committed the original Usenet spam by cross-posting to every public newsgroup an advertisement for their services in the then-upcoming U.S. Government Green Card "lottery." Unfortunately for me and for 48,000-some-odd other customers, Netcom was Canter and Siegal's ISP at the time.

In "How to Make a Fortune on the Information Superhighway," (Canter and Siegal's mishmash of braggadocio, disinformation and badly-tuned advice about Internet commerce) these scoundrels claim that they received an equal number of positive and negative reactions to their escapade. I'm here to tell you they lie through their teeth.

Netcom canceled their shell account within 24 hours of that spam, but the repercussions from Canter and Siegal's misconduct—including unbearable latencies caused by endless mail bombs from outraged Usenetters—prevented me and all of Netcom's other shell subscribers from making practical use of our accounts for nearly six weeks after the miscreants were banished. They claim they made $100,000 from their villainy—and that that profit justifies their actions. What they persist to this day in refusing to acknowledge is the cost their ill-gotten revenue imposed on 48,000 other Netcom customers.

If we flash forward just over three years to the present day, we find Canter and Siegal have bequeathed us a sad heritage, indeed. Their spiritual successors have turned much of Usenet into a veritable swamp of Excessively Cross-Posted (ECP) and Excessively Multi-Posted (EMP) ads for products, services and (usually pornographic) web sites, as well as for various Ponzi schemes, chain mail trolls and other imbecile-bait.

Meanwhile, Sanford Wallace, (President of Cyber Promotions, Inc. of Philadelphia, Pennsylvania, USA, and Administrative Contact, Technical Contact, Zone Contact and Billing Contact for its online avatar, the notorious cyberpromo.com) and his equally unscrupulous fellows have taken to flooding the Internet with e-mail spams. Wallace has gone so far as to set up his own domains, with his own nameservers and high-speed Internet links, to continue spewing out the approximately 17 million pieces of spam his operation generates each day.

ADDING INSULT TO INJURY

Usenet spams aren't merely annoying. Beyond the simple clutter and distraction they inflict on users, they eat up large amounts of bandwidth and storage for both ISPs and their customers.

In April, 1994, when Canter and Siegal started the sorry trend, the entire Usenet hierarchy consisted of less than 6,000 newsgroups. At this writing, in mid-May, 1997, there are 21,295 newsgroups visible on Netcom's shell machines. If as little as 10 percent of Usenet traffic is spam, (and that's probably a low estimate,) that's 100 megabytes or so of junk being propagated to every news server on the Net (or, at least, to every news server that doesn't filter Usenet) every day. And, likewise, 100 megabytes of storage on those newservers that's taken up with junk and can't be used to store posts of interest to anyone but the author.

For peer-connected users, spam eats up time spent downloading headers, and much of the news client software in current use has no killfile capability. This wastes both bandwidth and connection time.

Worse still, there are many spammers who employ UNIX shell, Perl or other scripts to harvest e-mail addresses from posts to any newsgroup. Those addresses, in turn, are employed for bulk, Unsolicited Commercial E-mail (UCE), *à là* Cyber Promotions. These same spammers have also taken to using web spiders to comb pages for `MailTo:` addresses to add to their UCE lists. This is particularly annoying because the proliferation of spiders, in general, has contributed to the considerable latency the Internet as a whole has experienced in recent months. Since the spammers consider themselves above the constraints of netiquette, their rogue spiders tend to ignore the strictures of ROBOTS.TXT files. Many of the lists compiled in these ways are in turn offered for sale via UCE—a form of meta-spam where the product being hawked is designed to enable recipients to spam others.

One of the most infuriating aspects of both UCE and Usenet spams is that the perpetrators routinely forge the mail and news headers that would otherwise permit the author to be traced. In effect, they lie about who they are and from whence their spam originates. Once upon a time, this "spamoflage" would simply point to non-existent domains and usernames. More recently, however, some UCE spammers have taken to forging return addresses of recipients or ISP postmasters who complain to the spammers' upstream providers. This results in the inevitable flood of angry e-mail from recipients of bulk UCE being directed to users and/or ISPs who are, themselves, innocent victims of the spammers' deception. Even more damaging is the trend among spammers to hijack the mail servers of hapless ISPs who fail to run their mail from `inetd` and to take other precautions to avoid the black hole of security which is SMTP. In these cases, the legitimate `Received:` path leads back to an unwitting host ISP. This makes it extremely hard to convince angry recipients that the offending message didn't "really" originate from the hijacked site.

The ever-egregious "Spamford" Wallace has struck a Mephistophelian deal with Apex Global Information Systems (AGIS), a very large backbone services provider, which has taken the position that spam is a form of online commerce and thus is a permissible use of its network. Complaints to AGIS's postmaster account are answered with a form letter advising the writer to take up the issue with Cyber Promotions or one of the other offenders to whom AGIS has chosen to provide access without responsibility.

"SMITHERS, RELEASE THE LAWYERS!"

Naturally, all of the ill-will generated by spam has resulted in lawsuits, all of them, at this writing, apparently in the United States. Cyber Promotions has been the favorite target of these suits and, luckily, it has been losing them.

On December 13, 1996, Prodigy announced that it had reached a "resolution" of its trademark infringement suit against Wallace's company. Along with undisclosed financial damages, Cyber Promotions was permanently enjoined from using existing Prodigy accounts or from opening new ones for the purpose of sending UCE, sending any e-mail from a Prodigy account, using a Prodigy return address for any e-mail, causing e-mail to appear to originate from Prodigy or failing to honor any Prodigy member's request to be removed from a Cyber Promotions UCE distribution list.

In a complex ruling in Pennsylvania's Eastern District Federal Court, on February 4, 1997, Judge Charles Weiner handed down a decision in a case that consolidated suits Cyber Promotions and America Online cross-filed against each other. Judge Weiner held that Cyber Promotions, which he had earlier found had no First Amendment right to send UCE to America Online members, was required to send UCE to AOL only via AOL's "preferred mail" option, giving AOLers the power to block spam from Wallace's domains. AOL, in turn, agreed to notify its members from time to time that they had the option to receive UCE, should they so chose, and to give them instructions on how to unblock mail from Cyber Promotions.

Wallace had sued AOL for what he claimed was mail-bombing. (AOL redirected all bounced e-mail from its members who requested that their names be removed from Cyber Promotions' mailings to Wallace's service providers. Since there were literally millions of such otherwise-undeliverable messages, the effect of AOL's strategy was, indeed, akin to mail-bombing Cyber Promotions' service providers.) AOL had countersued, claiming, among other things, that Wallace was guilty of "unjust enrichment," because his business depended on forcing AOL to use its extensive infrastructure investment to deliver UCE on his behalf. Both Wallace and AOL claimed Weiner's ruling as a victory.

On May 7, 1997, Los Angeles Superior Court Judge Diane Wayne granted EarthLink Networks' motion for a preliminary injunction against Cyber Promotions. Judge Wayne found that EarthLink's lawyers had "made a sufficient showing of a reasonable likelihood of success on the merits" of its suit against Wallace's firm. EarthLink had sued Cyber Promotions for misappropriation of computer resources, conversion, trespass, unjust enrichment, violation of the U.S. Code Title 18 sections 2701 (the Electronic Communications Privacy Act) and 1030, (the Computer Fraud and Abuse Act,) infringement and dilution of EarthLink's service mark under both U.S. and California law, false designation of origin and unfair trade practice and competition.

Judge Wayne enjoined Cyber Promotions from sending unsolicited e-mail ads to EarthLink subscribers, using EarthLink's "computer network, systems, and equipment, e-mail system, and servers without prior express authorization," preventing EarthLink from blocking Cyber Promotions' UCE, "inserting false reference to plaintiff's accounts, equipment or domain address" in any Cyber Promotions UCE and, specifically, from "falsely representing, permitting, or causing" Cyber Promotions' UCE as being "sent by or originated from" EarthLink or an EarthLink account. She went on to note that there is "sufficient evidence" of Cyber Promotions' "past and current" UCE and its "deleterious effect" on EarthLink's systems and operations. She called Cyber Promotions' actions "trespass" and cited the case of CompuServe Inc. v. Cyber Promotions, Inc. in Ohio's Southern District Court as precedent for granting EarthLink the right to block Cyber Promotions' UCE. Wallace claimed that Zeran v. America Online, Inc., a case brought under the Communications Decency Act, applied in his firm's defense. Judge Wayne noted that Zeran wasn't citable, (the CDA had been declared unconstitutional by a Federal appeals court) but held that it addressed content, rather than use, and thus was

inapplicable with regard to EarthLink's complaints against Cyber Promotions for trespass and related charges.

After further arguments, Judge Wayne also levied a $25,000 bond against Cyber Promotions to ensure its compliance with the terms of her grant of preliminary injunctive relief to EarthLink. As of this writing, no date has been set for the actual trial itself.

On May 9, 1997, in Pennsylvania's Eastern District Federal Court, CompuServe Information Services won a Final Consent Order by Stipulation against Cyber Promotions permanently enjoining Cyber Promotions from "causing, authorizing, participating in, or assisting others" to send UCE to CompuServe e-mail addresses, or to employ any "false or misleading reference" to CompuServe "in the header of or in connection with any electronic message." Cyber Promotions also agreed to pay some $65,000 in CompuServe legal fees in exchange for ad "runs" on CIS, and to a number of other tradeoffs that, on balance, are unlikely to do much good for Wallace's bottom line.

POLITICALLY CORRECTABLE?

Title 47, Chapter 5, Subchapter II, Section 227 of the U. S. Code makes it illegal to transmit unsolicited commercial faxes. Some Net lawyers (none of whom, to my knowledge, are actual lawyers, mind you) contend that Section 227's definition of a fax machine as "equipment which has the capacity (A) to transcribe text or images, or both, from paper into an electronic signal and to transmit that signal over a regular telephone line, or (B) to transcribe text or images (or both) from an electronic signal received over a regular telephone line onto paper" can be stretched to include e-mail-capable (particularly MIME-compliant e-mail) computers.

I'm not a lawyer and am not able or willing to give legal advice, but it's pretty clear to me that the definition of a fax machine doesn't stretch that far. However the Coalition Against Unsolicited Commercial E-mail (CAUCE) is promoting an amendment to Title 47 which would add language specifically extending Section 227's prohibitions on junk faxes to UCE. Republican Congressman Chris Smith of New Jersey has announced he will introduce the CAUCE amendment in the near future. Meanwhile, on May 21, 1997, Republican Senator Frank Murkowski of Alaska, a member of the Congressional Internet Caucus, introduced the "Unsolicited Commercial Electronic Mail Choice Act of 1997." Murkowski's bill would require the `Subject:` header of all UCE to begin with the word "Advertisement," permitting both ISPs and end-users easily to filter out UCE. Murkowski's bill would also require that all UCE contain a valid street address, telephone number and return e-mail address.

One problem both bills share is that the U.S. government can't compel non-U.S.-based spammers to comply with such legislation. Additionally, the Smith amendment to Title 47 worries many civil libertarians (including yours truly) because it amounts to a U.S. government-mandated limitation on free speech. And the Murkowski bill suffers from problems of definition. As a member of the computer trade press, I'm constantly receiving press releases via e-mail. I welcome many of them, since they alert me to announcements about new products or policies that interest me. On the other hand, invitations to "invest in the opportunity of a lifetime" and the like don't interest me at all. The Murkowski bill may require both types of e-mail to adopt the "Advertisement" flag, meaning that I get to choose to continue being spammed or give up receiving press releases. Both bills also represent attempts to exert U.S. government authority over the transnational Internet.

At least eight U.S. states are also considering legislation to regulate spam. In many cases, these same states are attempting to regulate Internet content in other contexts, such as bans on pornography, bomb-making instructions, hacking tutorials and other adult, unsavory or subversive data.

That's a bad thing.

The Net escaped from U.S. government control back in the eighties. Every government attempt to regulate it has been to restrict its content to subjects and language appropriate for grade-school children. That is only in part because so few legislators are themselves Internet-literate. Unfortunately, it's mainly because it's the nature of politicians to meddle with things they don't understand, to insert themselves into other people's business and to grandstand at every available opportunity.

We should not be encouraging them. Remember the Communications Decency Act? That was ruled unconstitutional last year, but the Supreme Court has agreed to hear the Justice Department's appeal of that decision later this summer. I think the Justices will be smart enough to uphold the original decision.

But, they might not be.

SPAMMER, REGULATE THYSELF?

One of the most widespread complaints about spammers is that they ignore "remove" requests. Many of them don't bother supplying a remove mechanism. Those that do frequently ignore helpless users' requests to be deleted from their lists. Worse, many Internauts suspect that their entreaties to be removed are treated, instead, as confirmation that their address is a valid one, making it a valuable entry for lists to be brokered to other spammers.

On April 23, AGIS proudly announced a solution to the UCE problem. AGIS' "solution" was to initiate the formation of what it calls "an industry wide trade association for the purpose of promoting ethical bulk mail practices." It promises to require bulk e-mailers to join this association to purchase Internet connections from AGIS, and to set up a web-based global "remove list," supposedly permitting users who don't wish to receive UCE to register once to be removed from all the major spammers' distribution lists.

As that great philosopher of Western civilization, Rocket J. Squirrel, put it, "That trick never works!"

First, according to many ISPs, the bulk of spam originates from small-time operators who purchase individual Net accounts, spew their UCE, get kicked off by their provider and move on to their next account with another ISP. Second, many of these same idiots actually offer giant lists of e-mail addresses to other idiots, making the small-time operator problem self-perpetuating. Third, by attempting to legitimize spammers, AGIS is merely encouraging them to continue abusing the Net. Finally, there's the entire non-AGIS professional spam community, which may well decide to move its collective operations offshore in any event, especially if the Smith amendment to Title 47 or the Murkowski bill go through.

Besides, the concept of "ethical bulk mail practices" is uncomfortably close to the idea of "ethical rape." In both cases, the essence of the act is its non-consensual nature. Remove the "unsolicited" part

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WHAT'S A MOTHER TO DO?

There are things you can do to protect yourself and your users from being victimized by UCE. In general, they fall into one of two categories: address filtration and enhanced mail daemon security.

In the category of address filtration, you'll find good information and tools at the Scott Hazen Mueller-maintained Internet spam boycott site at **http://spam.abuse.net/spam**. Although the tone of the site is a tad intemperate for me and much of the legal opinion in the FAQ is suspect, Scott maintains a pretty useful group of links to tools and tutorials on filtering, such as Nathan Waddoups' Spamhandler Pro package (a Perl script, a set of recommended changes to `.procmailrc` and a text list of UCE promulgators' addresses) and advice on how to apply the Usenet Death Penalty to sites that harbor Usenet spammers.

Like AGIS, for instance.

The spam boycott site also provides directions on filtering IP addresses (such as those of AGIS) to block all traffic to and from particularly offensive sites. This is a weapon of pretty awesome dimensions—a kind of Internet Doomsday Device—and it ought to be employed only with the greatest fear and trembling, because, if applied too easily, too often and by too many providers, it could potentially invite the breakdown of the Internet into an *incommunicado* group of island networks.

That would be a bad thing.

As for enhanced security, the spam boycott site includes directions on how to protect your SMTP mailer by running it out of `inetd` and using `smap` (from the Trusted Information Systems Firewall Kit, available from `www.tis.com/docs/products/fwtk`) to deny spammers access to port 25. Regardless of anything else you do, you really should implement this patch to prevent unauthorized users from hijacking your SMTP mailer via Telnet.

Finally, you should already have promulgated a user policy on spam and you should make sure that every one of your users gets a copy of it when he/she first signs on and every six months or so afterward. Your policy ought to forbid your users from sending UCE and from Excessive Multiple- and Cross-postings to Usenet, and it ought to detail the penalty for violating that ban. It ought to include clear directions on how to complain to you about any UCE they receive (such as making sure that they know to include the full headers of the spammail about which they're griping) and tell them what you'll do about it (such as investigating and, if warranted, officially complaining to the spammer's provider). And it ought to include directions on how your users can set up their own filtering mechanisms in Netscape Communicator, Eudora Pro and other MTAs and/or point to URLs where your users can find those directions.

FULL DISCLOSURE AND FINAL CAVEATS

I cannot tell a lie: I, too, have committed spam.

When I put "Perls of Wisdom" (`www.starkrealities.com/@inet037.html`) on my web site last January, I gathered up all the e-mail addresses of all the folks who had ever written to me and put them on a notification list. That was legitimate and fair...after all, they wrote to me, first. What was illegitimate and unfair was that I also added the addresses of industry press people, without first asking them if they objected. (This poses a conundrum—is it okay to send unsolicited e-mail to people asking if they'd like to receive unsolicited e-mail?) Worse, still, I also added the addresses of people who subscribe to some of the same lists as me and, worst of all, I filtered the addresses out of several Usenet groups that have to do with HTML authoring and added them to the list, too.

Now, mind you, I wasn't selling anything. My site is ad-free and doesn't even include a guest book. And the people whose names I added without permission were clearly people I could reasonably assume would be interested in an article about the Perl language. I also made it a point to include my real return address, and I promptly honored all requests to be removed and apologized to anyone who objected to my mailing. Nonetheless, it was a bad thing that I did, and I suffered considerable criticism for it.

Here's the interesting part: I have since sent out two other mailings to the survivors of that list. Each time I did, some subset of the remaining recipients has sent me a blustering "How dare you?" letter—if I recall right, there were four of them, last time. I can only conclude, since they didn't object to my earlier mailings, that they forgot that they were on my list.

My own list, originally 2,500 addresses, is now down to about 2,000 (most of the reduction is from bounced mail, rather than unsubscribe requests, by the way). I have a friend who also maintains a notification list for his family's firm. They're in the distance-learning business and they have a list of some 25,000 people who have, at one time or another, expressed interest in being kept up to date on their course offerings. Every time my friend sends out a notification of a new course offering, he gets back a considerable number of "How dare you?" letters, himself, and all of them are from people who originally asked to be *on* his notification list!

Take this as a cautionary tale. This kind of mistake is not uncommon, especially when the list manager sends out infrequent mailings. So, make sure that your user is really being spammed before reacting — and especially before overreacting.

In the post-Canter-and-Siegal Internet, spam has become an inescapable fact of life. I wish I had a panacea to offer, but I don't. You should beware of those who think that they do, because, as Grossman's misquote reminds us: "Complex problems have simple, easy-to-understand wrong answers." ◆

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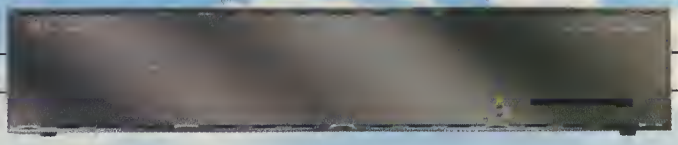

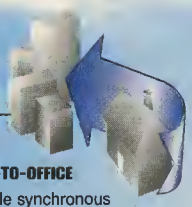

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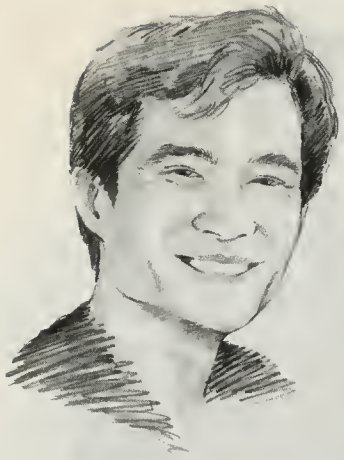

Notes From The Underground

by Wallace Wang

ROLL YOUR OWN ENCRYPTION

Despite protests from nearly everyone involved in the computer industry, the political might of the technologically ignorant still reigns over too many governments. In the case of the United States, government officials still insist on cramming encryption regulations down everyone's throats, despite the fact that encryption is readily available overseas.

Although battling politicians (who believe that increased regulation and government control is the solution to controlling crime, although they'll never agree to a separate government to regulate and control their own activities) can help keep encryption freely available to everyone, try another tactic. Rather than rely on government-approved encryption, spend some time to create your own.

Wallace Wang is the author of ***CompuServe For Dummies***, ***Visual Basic For Dummies***, ***More Visual Basic For Dummies***, ***Microsoft Office 97 For Dummies***, and ***More Microsoft Office 97 For Dummies***.

When not working with computers, he performs stand-up comedy and has appeared on A&E's *Evening at the Improv* TV comedy show. He can be reached via e-mail at 70334.3672 @compuserve.com, bothekat@aol.com, bo_the_cat@msn.com, or bothecat@prodigy.net

Before rushing to your favorite compiler, take a moment to visit the Beginner's Page of Cryptography at www.fetch.net/~monark/crypto/main.hts. This web site explains how encryption works by describing simple ciphers such as the Caesar Cipher (which works by substituting letters such as the letter 'A' for the letter 'C', the letter 'B' with the letter 'D' and so on), the Jefferson Cipher (which uses multiple wheels of letters to create a new code), and the Monoalphabetic Substitution Cipher (which uses a scrambled alphabet to represent different letters in a message).

By toying around with these simple encryption algorithms (and cracking them too), you can get a quick lesson in the difficulty of creating secure encryption while breaking your own ciphers as well. For another introduction to encryption, visit the Security Through Encryption web site at www.coil.com/~ebright/SECUR45.HTM. Once you've understood the basics of encryption, it's time to move on to some real-life examples.

To aid programmers wishing to develop their own encryption algorithms or implement existing ones, grab a copy of Microsoft's CryptoAPI, which Microsoft bills as a "cryptographic service provider development kit." The CryptoAPI toolkit doesn't provide any encryption algorithms itself; it just provides .DLL files that can simplify the process of writing your own encryption routines.

While you can download the CryptoAPI documentation, you must fill out an online form to request that Microsoft mail you the actual CryptoAPI files themselves. To learn more about CryptoAPI, visit Microsoft's web site at www.microsoft.com/workshop/prog/security/capi/cryptapi-f.htm.

The really ambitious can grab a copy of "Applied Cryptography" by Bruce Schneier. (If you're on a budget, check with your local university bookstore. Many universities use "Applied Cryptography" as a textbook so you may be able to find used copies selling at a fraction of the original list price.) Not only does "Applied Cryptography" provide detailed explanations of various encryption algorithms such as the Data Encryption Standard (DES), but it also provides its own encryption algorithm called *Blowfish*.

Just type the source code from "Applied Cryptography" into your favorite C/C++ compiler and you too can create your own encryption routines. Of course, if you don't know anything about C/C++, then you could try converting the "Applied Cryptography" source code into another language such as Visual Basic or Delphi (good luck). Rather than torture yourself needlessly, visit the Azalea Software web site instead at www.encryption.com.

Azalea Software sells an encryption toolkit called *Carrick*, which provides a full set of routines that you can use within your own programs whether you use C/C++, Delphi, Visual Basic, or any programming language that lets you access .DLL files such as dBASE or PowerBuilder. Carrick uses the "Applied Cryptography" Blowfish algorithm and is available for Windows 3.1, Windows 95, Windows NT, and the Macintosh.

For another encryption toolkit, visit MaeDae Enterprise's web site at www.maedae.com. MaeDae

Enterprises sells the Windows Encryption Toolkit (WET), which provides .DLL files for both Windows 3.1 and Windows 95/NT. WET also uses the Blowfish algorithm and can be called from C/C++, Visual Basic, Delphi or any other programming environment that can access .DLL files. In case you're not convinced, you can download an evaluation copy of WET and try a limited version for free.

For information from a major source of encryption itself, visit the RSA Data Security web site at `www.rsa.com`. Not only can you find information about encryption along with $10,000 contests for anyone who can crack various encryption algorithms, but you can also order BSAFE 3.0, a portable C programmer's toolkit that provides algorithms for implementing DES, Triple-DES, and various other encryption algorithms.

In case the idea of spending money to buy an encryption toolkit doesn't appeal to your budget, visit `www.eskimo.com/~weidai/cryptlib.html` and grab a copy of Crypto C++, a free (that's right, free) set of C++ routines that implement the Blowfish and DES encryption algorithms among others.

For more links to encryption web sites and software than you could ever dream about, visit the Cryptography and Security web site at **http://`theory.lcs.mit.edu/~rivest/crypto-security.html`**. This web site contains plenty more links to free encryption software, companies selling encryption packages, and universities offering encryption course materials. Spend a day or two browsing through these links and you'll get a crash course on encryption for free (or at least for the cost of your local Internet account).

While the politicians argue amongst themselves about the importance of keeping encryption a state secret, the Internet is already seething with encryption libraries, programs, and information that has already undermined much of the government's chance of regulating encryption forever. Grab a copy of an encryption program or toolkit, write your own encryption, and spread the word around to others who want to keep encryption free for everyone. And, be sure to encrypt your message too, just in case the government is watching you. ◆

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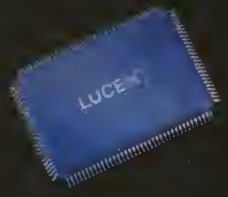

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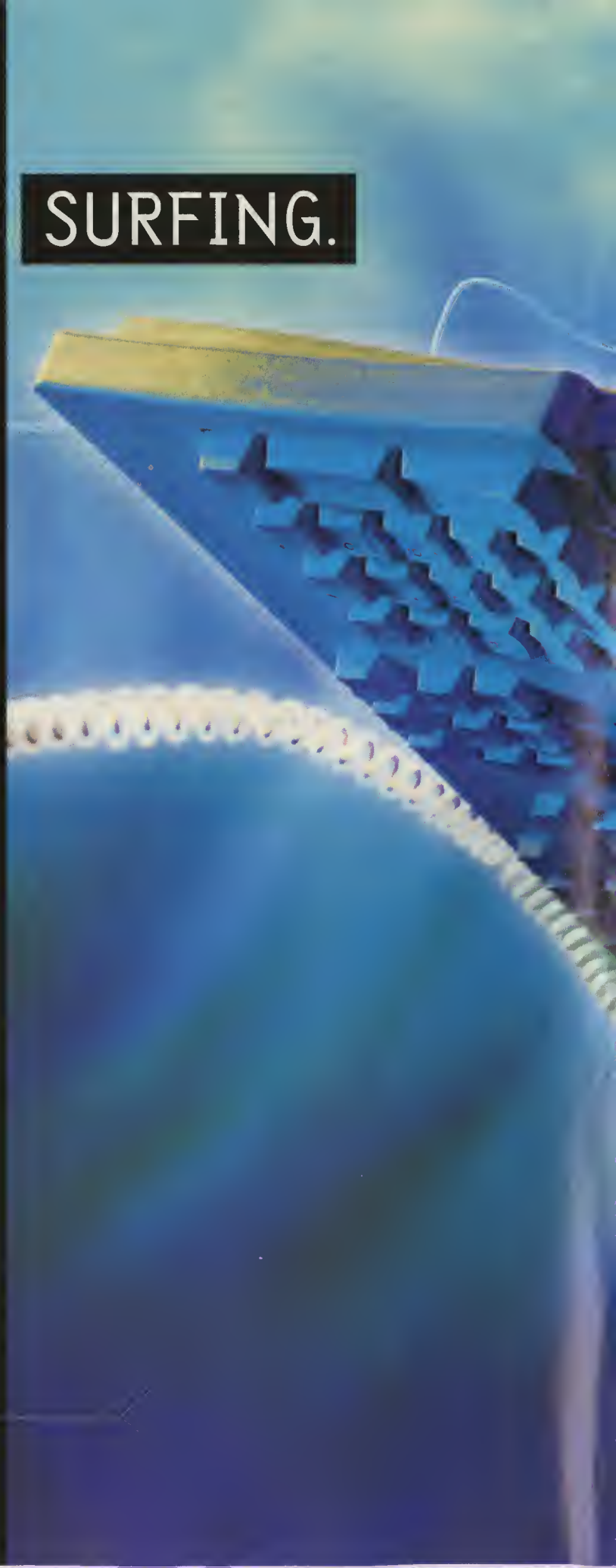

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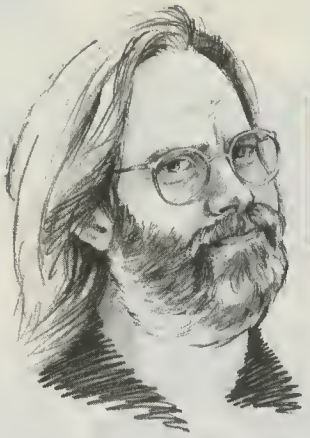

Java Jitters

by Doug Shaker

DOUG TRIES TO DEDUCE MICROSOFT'S PLANS FOR JAVA

Doug Shaker is a freelance technical writer in California. He has one wife, two children, three pets, and five computers. The computers are obviously out of hand. He can be reached via e-mail at **mailto: doug@theshakers.org**. Yes, that is a personal Internet domain. We told you the computers were getting out of hand.

A couple of columns ago, I took a look at ActiveX — a.k.a. OLE, COM, DCOM and probably a host of other names, as well. ActiveX was getting compared with a lot of other technologies — Java, CORBA, and quite possibly recombinant gene technology — in the computer press. I said that I thought most of the comparisons were pretty lame and, along the way, I pretty much blasted ActiveX as a lame adaptation of DLL/Visual Basic component technology to the modern computing world.

Usually, when I do something like this, I get at least a few e-mail messages telling me that I have my head in some uncomfortable and dark location and that I don't know how to distinguish that location from a hole in the ground. This time, the response was surprisingly different. I got no protests at all. Zilch. Nothing from Microsoft begging to differ. Nothing from the readers telling me that Microsoft knows what it is doing and if I keep the faith, all will eventually become clear.

This leaves me with the bizarre feeling that most people agree with me — ActiveX is kind of lame and they aren't using it. Not that it is so unusual for people to agree with me, but I didn't expect such universal agreement that a Microsoft technology was headed nowhere. To say the emperor has no clothes is a bit strong — Microsoft has, to say the least, plenty of good, strong products and technologies — but one might say that the emperor has no socks.

Confirmation of the status of ActiveX is also seen in a web column by Andrew Schulman (`http://webreview.com/97/05/23/feature/index2.html`). Andrew Schulman is a technological variant of an old-fashioned reporter. He takes expansive claims by a public figure — in this case, Microsoft — and runs them into the ground. In this column, he takes a look at some sexy, but misleading, ads by Microsoft that show hip, young web designers in hip, trendy photographs and that make a vague claim that ActiveX is letting these folks do groovy things with the web sites they design. Schulman then takes a look at the web sites and tries to find the ActiveX component of the web site.

In each case, it turns out that the hard work of the web site is being done with CGI technology or some other more generic technology. ActiveX is being used only for some relatively trivial animation that could as easily be done with Java or an animated GIF. Think about it. Microsoft decides to spend a few hundred thousand to million dollars on an advertising campaign to promote ActiveX as a groovy web technology, and the only users they can find are some guys doing some simple animation with it. Schulman's article is a good read — check it out.


WEB REVIEW

Cover Story

Inactive

What you won't find in Hell's Kitchen

by Andrew Schulman

Microsoft says its technologies let developers "Activate the Internet." But how many of the innovations it points to are really ActiveX, and how many are more familiar (and generic) Web protocols like CGI, animated GIFs, and cookies? Andrew Schulman takes a critical look behind the scenes of some ActiveX poster children.

If you read any of the web developer magazines such as *Web Techniques*, *Web Developer*, or *Microsoft Interactive Developer*, you've probably seen these ads Microsoft has been running over the past few months for ActiveX.

What else is happening in the Java world? Let's see... Pure-Atria is developing, under contract from Microsoft, a debugger for Microsoft's Java toolkit. Microsoft has contracted with Rational to make a version of Rational Rose into part of the Microsoft development toolkits. If you aren't familiar with it, Rational Rose is the dominant object-oriented design tool. Then, just to add spice to the whole thing, Rational is trying to buy Pure-Atria.

Keeping up the pace, Microsoft has just bought DimensionX. DimensionX produces an animation toolkit for Java. They also have a VRML engine written in Java. Besides this acquisition, Microsoft has been working overtime to rewrite the Java virtual machine to: (1) give improved performance on Windows platforms, (2) to add an API — called *Application Foundation Classes* (AFC) — which enables a number of Windows-specific calls to their version of Java, and (3) to add an easy to use ActiveX/COM/DCOM interface to their Java.

Then, just to make things interesting, Microsoft has bought WebTV — a maker of TV-top boxes that turn

your TV into an Internet browser. On the other side of the aisle, Oracle has spun off its Network Computer division — called *NCI* — where it will merge with a Netscape spin-off called *Navio*. Navio makes pretty much the same kind of electronics that WebTV does, but the Navio version is intended to live *in* a TV set, not on top of it.

The bizarre thing is that this isn't a year's worth of news — this is just about six weeks worth of news. The pace of things happening on the Net is pretty stupendous. I am stupefied, at least. Let's try to make some sense of it all.

The first thing that is obvious is that Microsoft plans on making the next release of Visual J++ into a real show. My guess is that the Pure-Atria debugger and the Rational Rose design tool will be in there, at no cost, along with the DimensionX toolkit and a Javabeans-based visual programming tool.

The Rational Rose tools are good, solid object-oriented design tools that also have a reverse engineering feature that will generate design diagrams from your raw, uncommented code. They also have a code generation capability that will generate stub functions — and sometimes more — from your design diagrams. It's pretty neat stuff. The complete C++ version of Rational Rose is upwards of **$4,000** when hosted on a UNIX box. And Microsoft will be OEMing some version of it in their language tools.

Pure-Atria makes configuration management tools and a wonderful memory debugger for C and C++ called *Purify*. I'm not sure what the Pure-Atria Java debugger will do, but the debugger half of the house, Pure Software, was founded by a bunch of old Artificial Intelligence/Lisp folks who made a fortune bringing garbage detection — that's what Purify really does — to C and C++. Knowing that was what was needed was a great insight. I am another former AI /Lisp type, and from my point of view, what Java is lacking is a debugger-browser that will let me browse the instantiations of Java classes in a running program and follow the references from one instantiation to another. There is a great Smalltalk tool, Object Explorer by Kent Beck, that does just this, but for Smalltalk. I know how useful it would be in Java and it is a exactly the kind of thing that Pure-Atria would know of, think of, and be great at implementing. Let's hope that is what they are working on.

I am not so gaga over the DimensionX acquisition. I took a look at their web site and had some fun playing with their groovy animations. The animations are nice and they are enabled with a relatively small Java runtime engine. DimensionX is clearly jazzed about being bought by Microsoft and the newly wealthy programmers are moving from San Francisco to Redmond. Sigh — It must be tough to be bought out by Microsoft. Now when I win the lottery, I plan to..., but I digress.

DimensionX describes the animation builder tool as being easy to use and enabling timeline-based or event-based animations. I am sure they are nice tools, but there isn't anything about them that Microsoft shouldn't be able to do themselves. Either Microsoft didn't think it would be useful to have a Java animation tool until just recently, or they had an in-house team that tried, and failed, to create some such toolkit.

They have so many programmers up in Redmond, that I find it hard to believe that they weren't working on something like this already. My guess is the team failed. Maybe the previous plan was to base the toolkit on ActiveX — like those groovy guys in the ads — and they figured out that wasn't going to fly. After all, would you design your web page around features that would only work on Internet Explorer — 40 percent of the market — and not on Netscape Navigator? Yeah, sure, you would. If you would, then I have a state-of-the-art 286 motherboard you might want to consider purchasing. Translation: ActiveX is dead meat, but they haven't told the corpse yet.

While we are thinking about all of this Microsoft stuff, let's take note of the things they *aren't* doing. While Microsoft has said they will build a Java 1.1 virtual machine, they have *not* committed to supporting all of the Java 1.1 class libraries. Some parts of Java 1.1 — native method interfaces, JAR files, and remote method invocation — conflict with Microsoft's solutions to the same problems that Sun was trying to solve in Java 1.1.

All this says to me that Microsoft is going to try to pull together an amazing, wonderful version of Java for it's next major release. It should include a design tool with reverse engineering and code generation, a state of the art debugging tool, an animation toolkit that will let you build animations easily and quickly, a visual programming tool with an ability to accept Javabeans components, a fast virtual machine with enhanced access to Windows, and probably a whole lot of other stuff crammed onto one little spiffy CD-ROM. But, and it is a big *but*, the code that you generate won't necessarily run on anything but a Windows box. If it does run on anything else, it will run slower, perhaps much slower. And it won't support all of the Java 1.1 class libraries without some fiddling.

When this happens, Sun will declare, with much drama, that Visual J++ isn't Java. And Microsoft will say, "It's Visual J++ and it's a better Java. It's Java compatible." And Microsoft's bet will be that there are enough goodies in the Visual J++ box to make people want to use Visual J++ anyway.

Will Microsoft succeed in busting up the "write once, run anywhere" parade? It's a hell of a question. "Write once, run anywhere" is a grail that programmers have been chasing since FORTRAN was standardized for the first time, maybe longer. Each time we have tried some sort of standard, the software suppliers have come back with "yes, we support that standard, but we've added all these nifty features that will make your life so much easier," never mentioning that the nifty features won't port worth beans.

Maybe we are wise to those tricks, but maybe not. And, when you think about it, how many web browsers run on something other than a Windows box? There are a few tens-of-thousands of UNIX-based browsers, and a few million Macintosh-based browsers. Apple seems to be headed down the tubes, unable to re-imagine its future without a hardware franchise. Right now, Apple's installed base is important, but in the future it may be eclipsed by a much larger installed base of TV-top boxes and network computers. Does Microsoft's purchase of WebTV start to make sense now? If you had to write off Mac-based and UNIX based browsers to get access to the WebTV-based browsers, what would you do? Who knows how it will turn out? I plan on sticking to the Sun-based versions of Java for now, though we can expect Microsoft to market some pretty attractive competition before the end of 1997. We live in interesting times. ◆

CYBERWORLD MONITOR

Frank X. Sowa

THE FALL OF NETS INC — A CASE STUDY IN FAILED E-COMMERCE

In May, what had been touted as one of the most successful Internet start-ups filed for Chapter 11 bankruptcy. While the majority of Internet concepts in recent years have yet to make profits and turn their founders into multi-millionaires, in the years preceding its failure, this company, with over 250 employees in 1996, was netting as much as **$35 million** yearly — and was the talk of Wall Street and the computer industry. Almost overnight, though, the company went from industry idol to industry "idle." What happened?

The failure of Nets Inc, formerly Industry.Net, is one of the best case studies available for sysops and system administrators who are placing their future hopes on successful Internet ventures. It shows that even without being regulated out of existence, a company with some of the best ideas — driven by some of the best and wealthiest entrepreneurial minds in the industry — can be driven to failure by poor timing, a lack of hands-on management, bad business decisions in the heat of the rapidly changing Internet market, and insufficient controls over cash flow.

THE STORY OF A GERMINATED IDEA THAT MADE IT BIG

The story of Industry.Net's recent demise is of special interest to me. In 1982, as a business consultant, I had the opportunity to work with the company's founder, Donald H. Jones, who was hashing out the original concept for a business plan.

Don Jones was a busy engineer. A graduate of Carnegie Mellon University, Jones went on to get 12 inventions under his belt, and start up four successful companies that made him famous locally, before venturing into the Internet world. He had the contacts, and the capital from his earlier successes, to make this idea fly.

The thing that most intrigues me about Jones' approach is that each of his ideas were successful follow-ons of previous concepts — building a comprehensive systems-approach.

INTERNATIONAL CYBERNETICS CORPORATION

For example, one company he founded, with which I had the first opportunity to work with him, was International Cybernetics Corporation (ICC). ICC was a cutting-edge operation designed around Don's patents on motion-controller and servo-motor technologies.

Like all entrepreneurial start-ups, Jones' ICC had trouble locating sufficient venture capital — forcing the CEO to search far and wide, even internationally, for suitable financial sources. ICC also had major problems finding enough high-technology software engineers to create the cutting-edge products envisioned. What set Jones' start-ups apart from others was the manner in which he systematically conquered the shortcomings.

Jones finally found venture sources out West. To make certain they were available on a more stable basis for Pittsburgh entrepreneurs, he and other Pittsburgh-based CEOs began a public-private High Technology Council to lure the venture money and new high tech firms to the region. The unique aspect about the council was that it was supported by Pittsburgh's largest Fortune 500 entities — which in turn became the best customer base for the high technology start-ups that joined the council — a true systemic feeding system that, to this day, has been highly successful.

INTO THE DIRECTORY BUSINESS

To solve the problem of locating talent for his start-up, Jones launched the world's first *International Software Engineering and Automation Directory*. For a fee, it listed companies by SIC Code and specialty. But, more importantly, it also listed individuals who were available to work on a project basis in very vertical automation engineering markets.

The directory was probably Jones' largest (and most unexpected) business success. With very little (but solid) marketing, Jones, who started the directory business out of his home, was soon up to his eyeballs in both requests for the directory, and for placements in the directory. Needless to say, ICC was soon recruiting the best, most qualified, automation industry talent in the world. Jones, an entrepreneurial visionary, was quick to see the value of the directory segment of his business empire — and immediately became interested in tapping the concept further.

Jones eventually sold ICC to Gould, Inc. for a hefty return on his investment. He then shifted into pursuing what he saw as a burgeoning opportunity. In my early conversations with him, it was his insights and explanations of this opportunity that eventually led myself (and much later Lotus' former CEO, Jim Manzi) to see that a great deal of money could be made in electronic commerce.

Don Jones created the world's first "interactive directory publishing company." His goal was to play the

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franksowa@aol.com

age-old matchmaker, making introductions between companies in need of products and services, and individuals and organizations that could provide those products and services. He focused on industry — because he knew the model — and because he realized that since millions of dollars were at stake in each sale, a few dollars spent to secure a better decision would be an easy sale as compared to services, or consumers.

NEILSEN TEC-DATA AND AUTOMATION NEWS

He had a unique concept. He would operate his directory publication and listing service together, using fax machines (the hot technology of the day) and information provided by companies for free which was stored for free, to be sent out upon request to individuals making requests for "purchasing" data. Jones "electronic" commerce concept was to provide the storage of the data (in hard copy) for free; and to provide free access by pre-screened purchasing people to the data via fax, charging the selling companies a nominal fee (**$15** plus overnight mail costs) every time a written or faxed request came in for the data.

As Jones explained, "The costs of face-to-face sales calls was far greater, and most companies saw the value of streamlining the process." First time purchases of automation equipment like that being manufactured by ICC, was a multi-million dollar proposition. The costs associated with sales calls was a poor return on investment unless a transaction actually resulted. Using the data network as a sales alternative presented an opportunity to locate competitive sources and sales opportunities at a fraction of the cost. Jones felt purchasing and salespeople would jump at the opportunity to lower the courtship costs. He was right. The company called *Tec-Data* took off, and soon attracted the interest of A.C. Neilsen Company who provided seed capital.

To keep the matchmaking interest going, Jones also continued to publish the *Automation Engineering Directories* (which provided an immediate sales list for his new business), and an *Automation News* newsletter which he sent out for free to those who requested it. The *Automation News* newsletter provided the general news of the industry, small paid display ads from companies that were using the service and, most importantly, long listings of project and employment opportunities taking place worldwide in the automation industry with a fax code to make instantaneous inquiries.

THE AUTOMATION NEWS NETWORK

Attempting to speed up growth, Jones decided to automate the network in 1987, using his own UNIX-based proprietary BBS and fax-on-demand software. He saw the benefits of the burgeoning online world before most others. Almost overnight, the transactions that took place in his start-up tripled. The company was renamed *Automation News Network*, and while basically still following the original game plan — the data was now stored online and companies were charged a monthly fee for keeping the materials there — in addition to a "download fee" for each BBS request for information. Companies began paying between **$500** and **$250,000** for the service — and it became a smashing success. The new "online" focus was driven by its capability to provide low-cost, universal access, which also increased profit margins.

On the hard-copy publishing side, the circulation of the *Automation News* newsletter also grew exponentially, and the directories business grew into a regional format in fifteen cities. Things were looking very good for the start-up.

INDUSTRY.NET

In 1992, with sales netting in excess of **$10 million**, Jones moved his operation from the very specific vertical market of automation engineering, to a broader, business-to-business focus covering the entire spectrum of all manufacturing industries. The new service was refocused from a proprietary client/server BBS to a web-based Internet service where Jones felt even better margins could be had — as the Net offered the lowest cost, universal connectivity. Jones, a master at creating and marketing through traditional avenues, made Industry.Net into an interactive sales-based Internet community, and things took off.

By refocusing on a broader market, and moving from a proprietary service to a public web-based service, Industry.Net increased its rolls of prescreened purchasing managers and engineers from 20,000 to over 380,000. It increased its clientele of businesses offering wares from 750 to over 3,500. The staffing required to serve this market also grew tenfold in just a couple of years.

By 1995, Industry.Net was netting **$35 million**, and drawing the interest of investors worldwide. But, Industry.Net was also starting to show growing pains. It had risen too fast, and didn't have the financing, management, staffing, cash flow, or content in place to maintain its growth rates.

Furthermore, because companies using Industry.Net knew little about web-commerce, or maintaining and operating a successful web-presence, Jones had to hire hundreds of experts to keep the company humming — and to provide maintenance, back-end order entry, fulfillment, online payment systems and operation of web sites for selling-side organizations. By 1996, these ancillary services, along with the hard copy publications, became the primary income generators for the business but they also began to heavily drag down profits.

MANZI JOINS INDUSTRY.NET

Jones saw the problems, but also saw great promise on the horizon. He therefore moved to ensure what he felt would be a bright future for his company.

In January 1996, with much fanfare, Jones recruited software entrepreneur and pioneer, Jim Manzi to serve as Industry.Net's new chief executive. Manzi had sold his Lotus Development Corp. to International Business Machines Corp., in a hostile takeover, for **$3.5 billion** just months earlier. Jones knew that without such a high profile manager, it would be very hard to get the necessary financing to keep Industry.Net afloat.

Manzi, who was responsible for the success of the Lotus 1-2-3 spreadsheet, and its leadership in collaborative groupware with Lotus Notes, was one of the few people who could envision a market that hadn't quite developed. The Jones formula for e-commerce was working and had a long track-record where other e-commerce concepts by more highly visible organizations had failed terribly. Manzi knew that Internet commerce was going to be a huge business by the turn of the century.

MANZI LEAVES HIS MARK

Manzi was quick to take the reins and leave his mark on the company — even though he never obtained more than a five percent stake in the operation. Just months after moving into the corner office, Manzi moved the headquarters of

the operation from its less expensive industrial site in the suburbs of Pittsburgh, to the high-rent district near his home in Cambridge, Mass. At Jones' pleading, he reluctantly left most of the operating units in Pittsburgh (although announcements were made in 1997 that much of that operation would also be moved to the East Coast, as Manzi didn't care for Pittsburgh). Jones went on to obtain tax abatements and to commit to an ultramodern operational facility for the company in downtown Pittsburgh, causing infighting between the older and newer factions of the company.

In July 1996, Manzi engineered a merger of Industry.Net with AT&T's New Media unit — creating a new "Internet management company" called *Nets Inc.* The high profile move put Nets Inc in charge of managing all of AT&T's consumer Internet services, and refocused AT&T's problematic Internet operations from directly competing with AOL, MSN and CompuServe for consumer subscribers, to providing a unique business-to-business online/Internet experience which came to be called *World.Net*.

Manzi also felt that Industry.Net was trying to do too many things. The directory business was growing so fast, it became impossible to accurately maintain original data. So, Manzi made the decision to shut down the hard copy publishing aspects of the business and leave hundreds of Pittsburghers unemployed. The move, while good business, hurt morale and took away a needed profit center. Manzi then refocused operations on the web site, moving activities to the Cambridge office, stepping up development of electronic commerce concepts, and providing ancillary support services to those paying for presence on Industry.Net. On the marketing side, he and Jones decided to focus on three sectors within every industrial business — the maintenance, repair and operations segments.

The moves put Nets Inc on the map, making it the largest pure Internet-based e-commerce operation in the world. But, it also cut deeply into Industry.Net's existing profit centers. It was a bold move that, had the timing been right, may have launched Nets Inc toward success at "going public." But the timing was off.

NETS INC FILES FOR CHAPTER 11 PROTECTION

In May, Nets Inc filed for bankruptcy protection. In its filing in federal court in Massachusetts, Nets Inc blamed its inability to secure added long-term financing. According to Manzi, he had been funding the company with $500,000 per week of his own money since he took the helm, and it just got to be too big of a burden. Manzi had been frantically looking for new financing and had interested some investors, specifically from Japan, a company spokesman said, but the negotiations were taking too long.

According to Manzi, Nets Inc was an advanced vision of Jones' concept. While Jones focused on the "community" aspects of the operation, Manzi believed in refining the business model. He wanted to transform Industry.Net from a community forum, where businesses came and paid to discover one another, into a full-service facilitation operation, where more focus was placed on providing total business-to-business consulting. He sought to identify multiple ways of booking revenues from the same sources. The value of the business remained on how many connections could be made between buyer and seller via the Net, but now the focus shifted to closing actual transactions.

Manzi may have moved too fast. The new vision of Nets Inc may have suffered from an Internet environment not yet mature enough to support it. The success of the earlier iterations of Industry.Net were focused in both the traditional publishing world, and in state-of-the-art electronic commerce. Of course, e-commerce is the sexier model of the two — and when your frantically chasing investors, that may have been an important determining factor based on faulty logic.

In a few years, Nets Inc may emerge from its bankruptcy reorganization a smaller, but successful business model for the Internet-based business-to-business paradigm. However, the company has already just about liquidated its entire operation maintaining only a small skeletal staff of 15 to 20 of the original 250 employees in Cambridge and Pittsburgh to keep the web site open for its prepaid customers. Hundreds of businesses have been abandoned, and are looking for a new Internet home.

It doesn't look like Manzi's billions or Jones's millions can save the concept — a great example of what not to do with a successful Internet-based business. ◆

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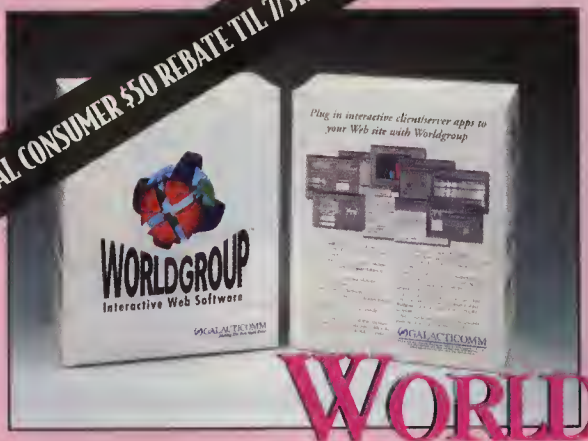

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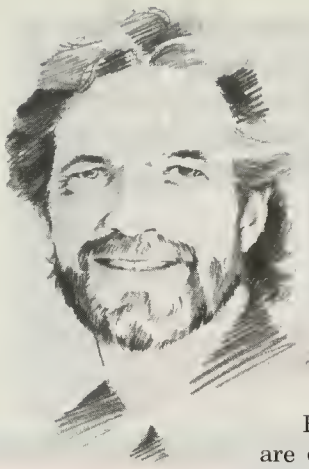


MANNING THE WIRES

by Ric Manning

COLLEGEEDGE MIXES CD-ROM AND THE WEB

College databases have been around since the formative days of CD-ROM and the World Wide Web. Today, there are dozens of discs and web sites that will let prospective college students compare schools, shop for affordable tuition and find academic programs that match their interests. And it's the rare college or university that isn't using the Web to lure new applicants.

But none of that bothered Young Shin, a 30-year-old Massachusetts Institute of Technology grad, and his brother Jung, 28, who went to Harvard. Two years ago, the brothers created their own college planning product called *CollegeEdge*.

Why get involved in a field that was already crowded with competition? The Shins say they were convinced that they could do it better. By integrating the CollegeEdge CD-ROM and a companion web site, they hoped to make college planning as easy and as comprehensive as tax preparation software or personal finance programs like Quicken.

They called their company *Snap Technologies*. "The idea is to make college planning a snap," said Young Shin, the company president.

Few of CollegeEdge's competitors can match its breadth and depth of information. The CD contains information on about 3,700 two- and four-year colleges, 3,900 scholarships, 150 majors and 240 careers.

The entry for each college lists the address for the school's admissions office, academic requirements, available majors and student activities. Users also can sort selections to find coed and single-sex schools, colleges in big cities or small towns, schools with intercollegiate sports and schools with a particular religious orientation.

Visitors to the CollegeEdge web site (`www.collegeedge.com`) can search a limited version of the database found on the CD-ROM. An online search is free, the Windows disc costs **$29.99**.

The program goes beyond the guidebook details and tries to play the role of counselor and adviser.

"We try to take it one step further than just presenting information," said Young Shin. "It's not enough to just find the right school, you also need to know what's the best way to get into the school and to finance the costs."

CollegeEdge helps students determine their areas of interest and points them toward career choices. CollegeEdge also will match students with available scholarships and estimate how much money their families will have to contribute.

To create a student's personal profile, the program uses a series of interview questions, a technique that is popular in tax-preparation and financial-planning programs.

CollegeEdge also will help students map a personalized admission strategy based on their academic qualifications, financial needs and college interests. A "reality check" looks at the student's GPA and test scores and compares them with those of the freshman class at target schools.

A set of "action tools" includes a college calendar planner and a word processor that will generate "request for information" letters and personal letters asking for scholarships and recommendations.

CollegeEdge uses its web site to streamline the application process. Once online, students can fill out an electronic application for seven New England schools and 166 other colleges that use a common application form.

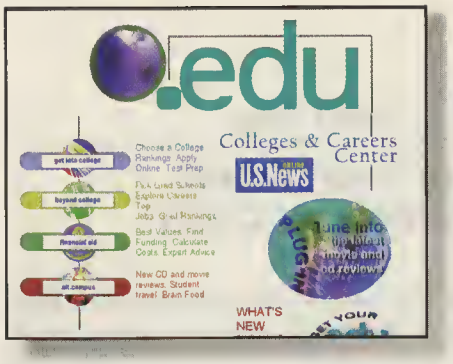
The Web also encourages communication among CollegeEdge users. For example, there's a public forum where students can post questions about their college quest and have them answered by a panel of experts and advisers.

Here's a quick look at other sites for college hunting:

Ric Manning is a columnist and web master for ***The Courier-Journal*** in Louisville, Kentucky. His weekly column covers computers, consumer electronics and the Internet and is distributed to more than 100 newspapers by the Gannett News Service. It's also available on the World Wide Web at **http://courier-journal.com/gizweb**.

Ric was the founding editor of ***Plumb*** and ***Bulletin Board Systems,*** two newsletters that covered the BBS arena in the early 1980s. His freelance work has appeared in several magazines including ***PC/Computing, Mobile Office, PC Week*** and ***Home Office Computing.*** Ric lives in Southern Indiana with his wife, two children and two Weimaraner dogs.

U.S. NEWS ONLINE
(www.usnews.com/usnews/edu/home.htm)



This database created by the weekly news magazine helps students compare colleges in areas such as academic reputation, acceptance rates, student/faculty ratio, cost, and how many students survive their freshman year.

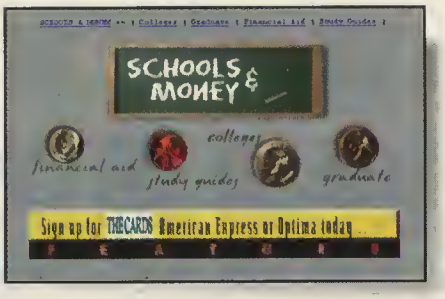
The site includes lists of colleges that are considered to deliver the best value for the money. High school counselors offer suggestions on college searching and explain why grades and test scores are so important.

COLLEGENET
(www.collegenet.com)

Like other web sites, CollegeNet offers the basic details on U.S. schools: tuition, class size, admission rates and so on. It will also deliver more information, such as a photo tour of the campus and reports on student life. You can peek behind the statistics to find out such things as the size of the dorms and whether freshmen can drive on campus. If your computer has enough horsepower, you can take a 3-D VRML tour of the Virginia Tech campus.

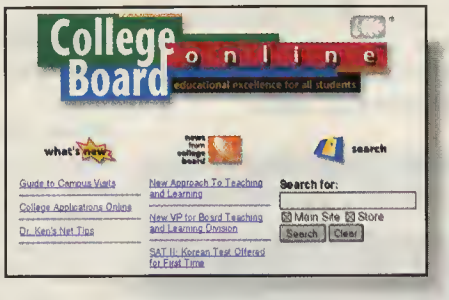
T@P ONLINE
(www.taponline.com/tap/higher.html)

Once you see banner ads promoting credit cards and condoms, it quickly becomes clear that T@p Online is brought to you by a company that markets products to college students. But that doesn't mean you won't find useful



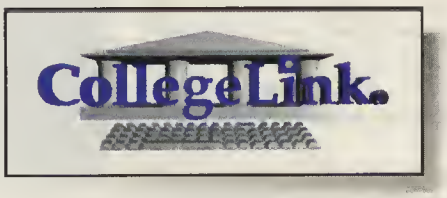
information on T@p's web site. The Ultimate College Survival Guide includes articles on budgeting for hidden college expenses, eating well inexpensively, living off campus, and living with a stranger. Students can share problems and solutions in an area of threaded message boards.

COLLEGE BOARD ONLINE
(www.collegeboard.org)



The College Board offers a modest database that will help students narrow their college search to five top targets. More useful is the college cost calculator and a scholarship search that helps track down sources for financial aid. The site also lets students register online to take the SAT.

COLLEGELINK
(www.collegelink.com)



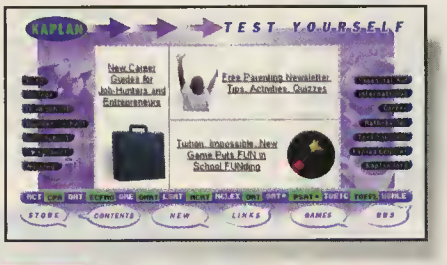
This online version of a CD-ROM used by many high school counselors lets students apply to several schools with one application. Download the CollegeLink software, fill in the basic form, then print out custom versions for hundreds of individual colleges. The first application is free. Additional applications cost $5 each.

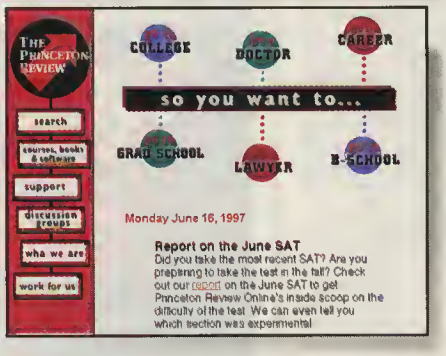
XAP
(www.xap.com)

If you have your sights set on Azusa Pacific University or Fuller Theological

Seminary, XAP can help get you there. The list of schools that accept XAP's electronic applications is not comprehensive. But, if it includes the school you or your child are aiming at, go ahead and fill out a "Xapplication."

TEST HELP





Two companies that specialized in preparation courses for entrance tests — The Kaplan Educational Centers (www.kaplan.com) and The Princeton Review (www.review.com) — also have helpful information on their web sites. Kaplan, for example, has several practice tests you can take online and Princeton has a ranking of the 300 best schools. ◆

BIG BOARD BRIEFS by Wallace Wang

DOES ANYONE USE THE MICROSOFT NETWORK FOR ANYTHING OTHER THAN INTERNET ACCESS?

MICROSOFT NETWORK OFFERS DISNEY DAILY BLAST

Even though hardly anyone seems to care about the Microsoft Network (MSN) any more, MSN continues trying to reinvent itself in a desperate attempt to find something that will work. The latest strategy features Disney Daily Blast on MSN, which will be free to MSN members for a period of 10 months. After that, members must pay. (In case you don't belong to MSN, you can still pay to access Disney Online at `www.disneyblast.com`.)

Disney's Daily Blast is The Walt Disney Company's first major offering of kids' programming on the Internet. Designed for children ages 3 to 12, Disney's Daily Blast will deliver games, stories, activities and kid-centric sports and news along with Disney's *Family.com*, an extensive online resource for parents.

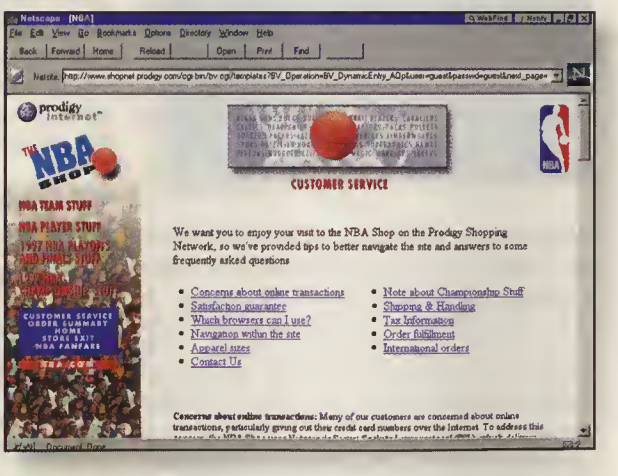
"Families have been waiting for the right reason to log on to the Internet," said Jake Winebaum, president of Disney Online. "We feel that the combination of Disney's Daily Blast and the high-quality network and programming of MSN will be a strong draw for those families. Together, we hope to make the Internet part of their daily ritual."

"Children and families are an extremely important audience for us, representing an entirely new generation that will grow up with this medium," said Laura Jennings, vice president of The Microsoft Network. "The magic of Disney's Daily Blast fits perfectly with the innovative programming approach of MSN."

Of course there's a hidden story behind Disney Daily Blast. As one of the first fee-based web sites, can we expect more corporations to follow this trend? And how many MSN members will continue visiting Disney Daily Blast after their free ten month membership expires? Stay tuned, maybe Disney and MSN will be the leaders in a new trend or forgotten failures buried beneath the Internet stampede toward riches.

PRODIGY JOINS FORCES WITH THE NATIONAL BASKETBALL ASSOCIATION (NBA)

Given the latest news releases in this column, the tide appears to be turning from open, web-based content back to the proprietary content that highlighted the battle between all the major online services. While MSN goes after Walt Disney, Prodigy has joined forces with the NBA to offer NBA-related content and a merchandise shop on Prodigy Internet. In return, the NBA plans to promote Prodigy Internet during game broadcasts on ESPN Radio.



The new NBA content will be available to Prodigy Internet subscribers and will contain exclusive content for the kid and teen market, an important demographic segment for both Prodigy and the NBA. This combined NBA/Prodigy content will offer such features as "Weekly Kid Interviews," where kids can interview NBA players via e-mail (and maybe ask them what it's like to be a millionaire just by dropping out of school) and a "When I Was a Kid" feature where an NBA player will describe moments from his childhood in a question-and-answer format.

Wallace Wang is the author of ***CompuServe For Dummies, Visual Basic For Dummies, More Visual Basic For Dummies, Microsoft Office 97 For Dummies,*** and ***More Microsoft Office 97 For Dummies.***

When not working with computers, he performs stand-up comedy and has appeared on A&E's *Evening at the Improv* TV comedy show. He can be reached via e-mail at `70334.3672@compuserve.com`, `bothekat@aol.com`, `bo_the_cat@msn.com`, or `bothecat@prodigy.net`

The area will also include features such as the "Player of the Week," audio clips, photo file libraries, weekly trivia contests and special features such as "This Week in NBA History," which showcases milestones and memorable moments of the NBA's first 50 years.

To help sell NBA merchandise, Prodigy will also offer an NBA merchandise shop available to both Prodigy Internet subscribers or anyone with a web connection at `www.shopnet.prodigy.com`. The Prodigy/NBA shop will feature a wide variety of NBA merchandise.

WILL ANYBODY BUY COMPUSERVE?

Rumors continue flying about CompuServe's imminent sale to a buyer. Unfortunately, nobody knows who that buyer might be. Initially, America Online was thinking about buying CompuServe and merging CompuServe's content with America Online. Despite the fact that CompuServe has been beaten fairly badly in the online service market, it still has a strong overseas and business presence – which are two lucrative markets that America Online wants to gobble up since offering **$19.95** flat-fee access to millions of frustrated customers.

Unfortunately, neither America Online nor CompuServe have reached an agreement. America Online is more interested in buying the profitable portions of CompuServe and leaving the rest behind. Obviously, CompuServe isn't interested in selling off its cash cows (its overseas and business market) and thoroughly gutting any chance for remaining alive for the future.

If America Online buys CompuServe, the price could be a whopping $1 billion, which is enough to make Bill Gates stop and pause for a moment. The stock prices of CompuServe and America Online both fell amid the latest rumors as no one believes that America Online could absorb CompuServe without serious problems. (America Online can't even get its own members online. How does it expect to service CompuServe's customers as well?)

Another possible suitor for CompuServe is Microsoft. Given the Microsoft Network's latest Hollywood style content that makes it as exciting to watch as the Warner Brothers Network's show, "Homeboys in Outer Space," the prospect of Microsoft buying out CompuServe seems more likely. CompuServe needs an owner with deep pockets and Microsoft needs an online service that people will actually want to use. (Does anyone use the Microsoft Network for anything other than Internet access?)

E-MAIL WOES ON THE MICROSOFT NETWORK

In another effort to become just like America Online, the Microsoft Network shut down its entire e-mail service on April 16th to upgrade its e-mail servers. For a period of between 24 to 36 hours, Microsoft Network members worldwide were not able to access or receive e-mail. Given the unreliability of the Microsoft Network's e-mail service in the past, this won't come as a shock to members already accustomed to having the Microsoft Network delay or lose their e-mail altogether.

Since its initial roll-out, the Microsoft Network has suffered through its share of teething problems ranging from the inability to bill its members for their time to losing e-mail and refusing access altogether. Even scarier is that the Microsoft Network is built entirely using Microsoft products, so if Microsoft can't even make it work, what chance does anyone else have?

Despite its growing problems, the Microsoft Network recently announced that it reached 2.2 million subscribers, which still places it third after CompuServe's fading 5 million and America Online's 8 million members. Prodigy is hovering around 1 million members and former greats like GEnie and Delphi have pretty much disappeared off the online service radar map.

BRITISH ROYALTY ON PRODIGY

In still another attempt to offer proprietary content at a price, Prodigy plans to offer members the chance to visit RoyaltyUK.com (Goto: Royals), an Internet site featuring news from the House of Windsor. The site will cost Prodigy members **$8.95** for six months or **$14.95** for one year.

Given the growing number of fee-based web sites popping up, will the Internet remain free or become a tollbooth-riddled information highway where every click of the button will cost you? Just remember that many people first thought that television would bring education to the masses, and look how far that prediction went astray. So think of what the worst that could happen to the Internet and prepare accordingly.

MICROSOFT NETWORK TO ADD VIRTUAL REALITY SERVICE

ParaGraph International, a Silicon Valley company founded in 1989 by world chess champion Garry Kasparov and several engineers from the Russian Academy of Sciences, has agreed to create a virtual-reality world for the Microsoft Network. ParaGraph International plans to supply content for the project, code-named *Magic Resort*, and will license its technology for three-dimensional environments to Microsoft.

ParaGraph officials said the project will allow users to create "avatars," or animated versions of themselves, that can visit online versions of world cities, beginning with Moscow and Paris.

"This project is a stage in our strategy to create a virtual time machine, in which anybody can visit any city of the world, while at the same time experimenting with his or her identity and behavior," said Stepan Pachikov, chairman and chief executive officer of ParaGraph.

COMPUSERVE FACES SHAREHOLDER LAWSUIT

A class-action lawsuit has been filed against CompuServe, its top brass, and its majority owner, H&R Block, charging that they misled shareholders by failing to inform them that the online service's growth and profits were being affected by "serious adverse trends."

The suit, which seeks an unspecified amount in damages (but which will probably include just enough for the lawyers to get rich), also names Goldman Sachs, Merrill Lynch, and George K. Baum & Co. as responsible parties in the alleged deception. The three brokerages underwrote CompuServe's initial public stock offering a year ago.

The suit charges CompuServe *et al* with "failing to advise purchasers of CompuServe common stock in (or traceable to) the initial public offering in April 1996 that the company was experiencing serious adverse trends that affected the rate of growth of its subscriber base and jeopardized its profitability."

Of course, if any shareholders had bothered to use CompuServe before they bought the stock, then they would have known right away that CompuServe's future was doomed from the start. Hopefully if Microsoft or America Online buys out CompuServe, then CompuServe's shareholders will be able to get their money back, but until that happens, given CompuServe's current problems, all their shareholders may as well kiss their money good-bye.

DUCKMAN JOINS MSN

In its continuing quest for Hollywood style entertainment (so when can we expect to see blondes in bikinis?), the Microsoft Network now offers the official Duckman web show, devoted to delivering irreverent attitude and social satire online.

While the animated television series focuses on Duckman's adventures as a "wise-quacking" detective, the new Duckman show on MSN chronicles Duckman's moonlighting gig as the hip, sassy, offbeat host of "The Microsoft Network Good Time Hour," an Internet talk show. The web-based Duckman is geared toward adults and is available exclusively to MSN subscribers on Channel 5 of the network's OnStage area.

Bob Bejan, executive producer for MSN, added, "We're delighted that the creators of 'Duckman' are bringing their irresistibly loud comedy to MSN with a hilarious new story line. Through our relationship with Paramount, we're delivering a range of engaging and, with Duckman, farcical online entertainment options for MSN members, building toward our goal of delivering the most compelling interactive programming on the Internet."

Asked to comment on his new online show, Duckman yelled, "What the hell are you starin' at?!"◆

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PUTTING THE NET TO WORK

by Durant Imboden

THE MINING COMPANY

Only a few years ago, the online business consisted of a few broad-spectrum services (GEnie, CompuServe, Delphi, Prodigy) and thousands of independently owned bulletin boards. The latter typically catered to niche audiences, and many did a great job of delivering specialized content and building online user communities.

Then the Internet came along, and all the rules changed. Bulletin boards were reborn as mom-and-pop ISPs while the market for online content became split between heavily bankrolled media companies and web hobbyists. The "little guy" no longer had much hope of turning a buck as a content provider — that is, until Scott Kurnit and The Mining Company came along at `www.miningco.com`.

Durant Imboden is a freelance writer whose credentials include published novels and nonfiction, fiction editing and staff writing for ***Playboy***, travel writing for corporate clients, and representing authors at a New York literary agency. He currently manages the Writing Forum on The Microsoft Network and co-authors the "Flame Wars" column on Delphi, where he is an editorial consultant. Durant maintains a web site for writers at **http://**`www.writing.org`. **MailTo:** `imboden@writing.org`

The Mining Company's business model captures — and improves upon — the best elements of services that are already on the Internet. For example:

Like Yahoo!, The Mining Company is organized as a hierarchical directory of topics. Unlike Yahoo, it supplies users with annotated links and features by subject specialists who are passionate about their topics.

Like the commercial online services, The Mining Company offers community in the form of message boards and chats. Unlike the online services, it doesn't charge a monthly membership fee.

Like GeoCities, The Mining Company organizes and aggregates web sites created by individuals. Unlike GeoCities, it has a standard "look and feel" across the service.

Like the best academic and hobby sites on the Web, The Mining Company has regularly updated features and archived content. Unlike those sites, it has a staff of recruiters, trainers, and editors to maintain professional quality standards.

Finally, The Mining Company offers its "guides," or site creators, something they won't find on the open Web: an opportunity to make money. Thirty percent of total monthly advertising revenues go into a pool that's divided among the guides in proportion to their share of total system traffic. Guides also get a hefty cut of other revenues, such as book sales through **Amazon.com** and third party use of their editorial content. Another 10 percent of ad revenues will be distributed as bonuses twice a year.

Scott Kurnit describes The Mining Company's business concept as a "shared-risk model," since guides receive only a small monthly draw (typically **$200**) until advertising revenues and individual traffic levels become high enough to generate significant personal income. Kurnit points out that it would take a **$300 million** payroll to build a service of The Mining Company's scope by traditional means. He should know, since he was an executive at Viacom, Prodigy, and the ambitious News Corp./MCI venture that reputedly sucked up hundreds of millions of dollars before being scaled down into **iGuide** (`www.iguide.com`).

Scott Kurnit recently granted me an hour for a telephone interview, and here's an edited transcript of our Q&A session:

Imboden: We know the basic model by now — "AOL on the Web," human guides instead of mindless

search-engine robots, and so forth. But let me ask you...when did you come up with your concept? And how?

Kurnit: It's something that was brewing for a long time, based on things I'd seen when I was on Prodigy. The efficiency of the model became evident when I was at News Corp. and MCI. We were using huge numbers of people, but the numbers didn't work. Looking at the Web, GeoCities, and other things out there made it clear that, if you put it all together, you'd have a viable economic model...along with service to users and new opportunities for web producers.

Imboden: The Mining Company's sites are based on templates and active server pages. Did you view these as being critical to your success?

Kurnit: Making this easy for the guides is what makes this work. Early on, when we showed our concept on paper to potential investors, they didn't think it was possible on a mass basis. But we're now at the point where people with moderate HTML skills can turn out good sites.

Imboden: When did you begin recruiting guides?

Kurnit: We recruited from the minute we started the business in July 1996 — primarily to determine what training systems and approaches would work across a wide number of people. Our first group was 10 guides. They made a valiant effort, but none are here today. We recruited the wrong skill sets: people with BBS/sysop experience who didn't have HTML skills. Over time, we've learned what skills are needed, and we've developed a training process that has now been refined through 50 classes and hundreds of guides.

Imboden: How can you compete with companies like Microsoft and AOL, which are spending hundreds of millions of dollars on development and marketing?

Kurnit: There are three legs to this industry: access, software, and content. We picked the best leg of the stool — content, the big C that includes context and community.

As you look through history, you'll see that the value of intellectual property has always exceeded the value of distribution. I think our content or context approach augments very nicely what Microsoft, especially, is doing with high-end, high production value content. We're producing one hell of a service with a much more efficient structure.

Imboden: Speaking of production values, The Mining Company's sites definitely emphasize links and feature articles instead of things like RealAudio and pictorial image maps. You seem committed to the "information has value" concept, as opposed to the philosophy that values interactivity over content.

Kurnit: I think it's too soon for the majority of the Web to have high-end production values. Having come out of the cable business and worked on the first cable-modem trials, I realize that high bandwidth is going to be slow in coming. We designed a service that would work well at slow speeds.

Compatibility was another issue. The Mining Company now functions fully on AOL, which it didn't when we launched on April 21. That was an important concern for us, since 40 percent of our potential traffic comes through AOL's gateway.

Imboden: Let's talk about recruiting again. How many guides are online with Mining Company sites?

Kurnit: As of May 27, we have 330 guides who are live in the navigation system, another 125 graduates backstage, and more than 200 in training.

Imboden: Are advertisers signing on?

Kurnit: We had nine advertisers at launch, a dozen at the end of the first week, and 15 after a month. We sold out our guaranteed impressions in the early stages, so that was a good sign. Now we're getting renewals — and renewals are the real test of whether the concept is working.

The best news for us is that advertisers get the difference between this service and other sites on the Web. On The Mining Company, the big advertisers can run their banners in niche content and still feel comfortable, which they couldn't do before.

Imboden: What about third party distribution deals and partnerships?

Kurnit: We have a deal with WorldGate, a company that will begin distributing Internet content over cable TV this fall. They'll create pages at the head end and deliver the pages down the cable to set-top boxes. We're also in the Launch Zone on AT&T WorldNet's home page, and we're talking with other potential partners.

Imboden: Do you see The Mining Company having a role in the coming "push" webcasting wars? Your system of templates as containers for generic HTML pages seems ideal for redirecting content into a push microcastinguote system.

Kurnit: We've had interesting conversations with PointCast and other companies in the push business. If I love gardening or I'm really into Venice, for example, push gets very special. PointCast is constructing tools that will make it easy to import standard HTML pages into channels.

Imboden: The Mining Company launched on April 21 with lots of fanfare — especially in New York, where you had "guerrilla posters," mobile billboards, and the like. Now that reality has set in and the guides are realizing they wouldn't become millionaires overnight, do you see burnout or guide turnover as being major obstacles?

Kurnit: Guide turnover isn't an issue yet. We're very sensitive to it. We don't expect guide sites to be built in a day. With proper management, expectations, and tool development, burnout shouldn't be a problem.

Imboden: Where do you expect The Mining Company to be at the end of 1997? I remember seeing projections of 10 million page views a day last February, when The Mining Company was announced.

Kurnit: I expect us to be in the top 10 or 15 web sites by the end of this year. A lot of factors come into play — such as individual guides getting a following, or users deciding that The Mining Company is the place to go if they're looking for something. With word of mouth being so powerful on the Net, there's no reason we can't meet that goal.

Early on, we told ourselves that page views weren't the early test of this business. Literally four weeks into the business, I

look at page views but don't take the numbers very seriously. The success factors are, "Do the sites perform?", "Are the guides good?", "Do we deliver something that isn't available anywhere else on the Net?" I'm already getting anecdotal responses from people who tell me The Mining Company is becoming a daily habit. That should be an even more common response after we've added message boards and chats.

Imboden: You launched in April, right before the traditional summer slowdown. Was there a strategic reason for picking a spring launch date?

Kurnit: One, it's when we were ready to launch. Two, I'm not sure I buy the slowdown theory. For many people, the Net is becoming part of their regular lives. Our research tells us that people are turning away from television and toward the Net. When I was at Showtime, our ratings didn't dip in the summer because — unlike the big networks — we did original content instead of reruns. As television underperforms by showing repeats during the summer, it'll be a great time for us.

Imboden: Down the road, do you think The Mining Company will earn most of its revenues from the current advertising model — i.e., banner ads — or do you think it will grow into a kind of online feature syndicate, supplying content to other services?

Kurnit: "Yes" and "yes." Our view is that the business will go a lot of ways. We have ad revenues now, transactions are just starting through our Amazon.com partnership, and it's easy to imagine other commerce sites finding The Mining Company a really good feeder into their sites and services.

We can also see guide content going into traditional media. We're talking to a book publisher, for example. Another possibility would be a guide having assistants who answer questions for a fee. There's a tremendous revenue opportunity when you get close to the consumer.

Imboden: By the time this column is published, The Mining Company should have "community" elements like message boards and chats. These days, "community" seems to be popping up all over the Web, like mushrooms or dandelions. Do you think it's likely to become an important part of The Mining Company's mix, or is it just something you're doing because you have to?

Kurnit: It's important — absolutely. And it's one of the most significant pieces of what The Mining Company is. The only reasons we didn't introduce chats and boards right away were to give guides a chance to get their footing, make sure we had stable software, and take care of other things that had a higher priority in a company of only 60 people.

Imboden: Let's look at The Mining Company from the perspective of an Internet service provider who wants to create value-added services for its customers and stand out from other ISPs. Is The Mining Company interested in striking distribution deals with small- to medium-size ISPs? If so, how would such a deal work?

Kurnit: We're definitely interested in partnerships at every level. How money flows is just starting to get sorted out, since there's value on both sides of the transaction. In general, I'd say that traffic is a good thing — and that if someone gives us traffic, we're willing to provide compensation. ISPs interested in partnering with us should contact Jeff Radov, (`MailTo:Jeff@miningco.com`).

Imboden: You've said publicly that The Mining Company wants to keep overhead to a minimum and remain flexible by outsourcing things like search tools, chats, and bulletin boards. Let's say I'm a software developer who's come up with the world's greatest web bulletin board system. Is there someone at The Mining Company I can contact to make a pitch for my product or service?

Kurnit: Sure, e-mail Eric Bingham, (`MailTo:ebingham@miningco.com`). We're always looking for interesting things, whether they be buddy lists or calendars or other tools.

Imboden: Is there anything you'd especially like to say to prospective guides or partners?

Kurnit: I think the short of it is that we have something very different from anything else on the Net, so companies who initially regard us as competitors might actually be prospective partners. The search engines are a good example of that.

As for guides, we've always been very selective. We now have enough training experience to know who's going to be a good guide. This means that our acceptance rate for new guides is down, but our success rates for graduates is likely to go up.

I'd say to people, "Get in now, because the most interesting sites are obviously going fast." This is about creating a very large system and a community in itself — a community of interesting people who are the entrepreneurs of Alvin Toffler's *The Third Wave*. ◆

Planet Internet is a full service internet provider. Our main effort is to provide the best service at the most competitive price. Planet Internet has established service plans to suit users from the internet novices up to the most technological experts.

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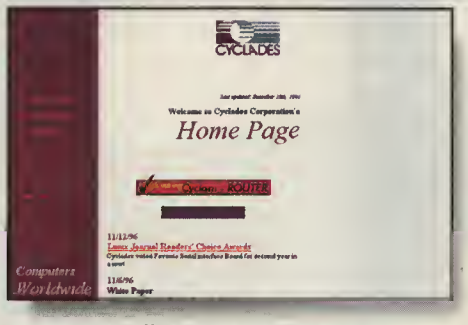
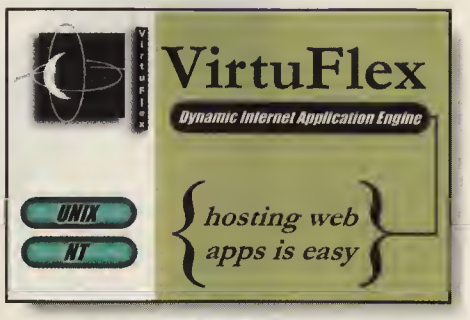


http://www.cyclades.com

Cyclades Corporation: Designs, manufactures and markets connectivity products: Multiport serial cards, routers, communication adapters and re-mote access servers. Cyclades supports UNIX and Linux, Window NT/Win95, BSD-derived markets, SCO, DOS, and Fossil for most of our products.



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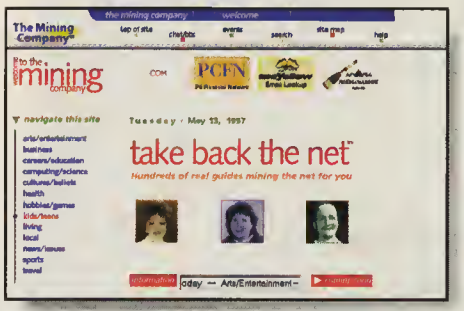

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http://www.capella.com

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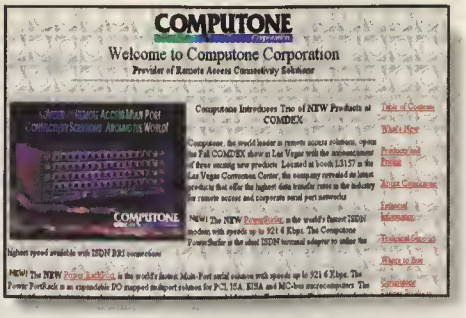

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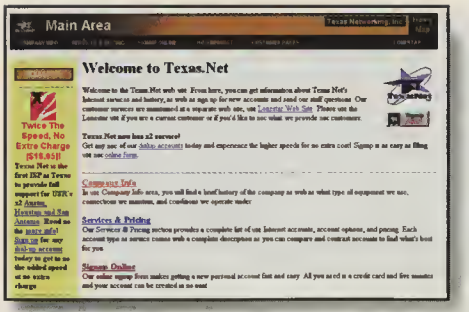

http://www.texas.net

Texas Networking: Texas Networking produces Power Supplies for USR Courier & Sportster 28.8 modems. The matching racks or cages for USR Courier modems form a combination that will untangle the worst ratsnest.

http://www.supernews.com

Supernews specializes in USENET for individuals and corporate accounts. Users can access all USENET without any usenet hardware for $100/mo — call 1-800-795-2020.

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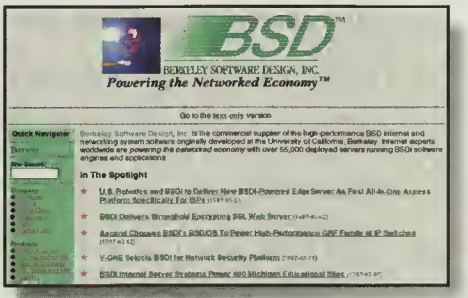

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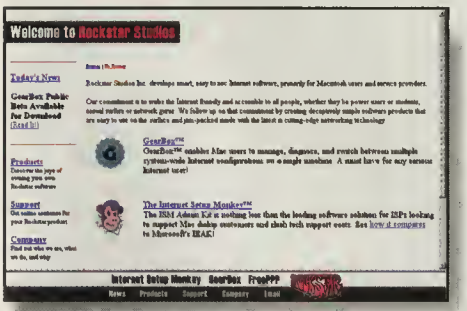

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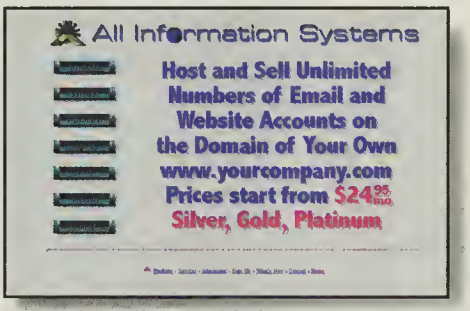

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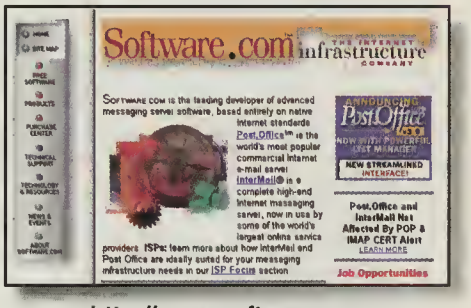

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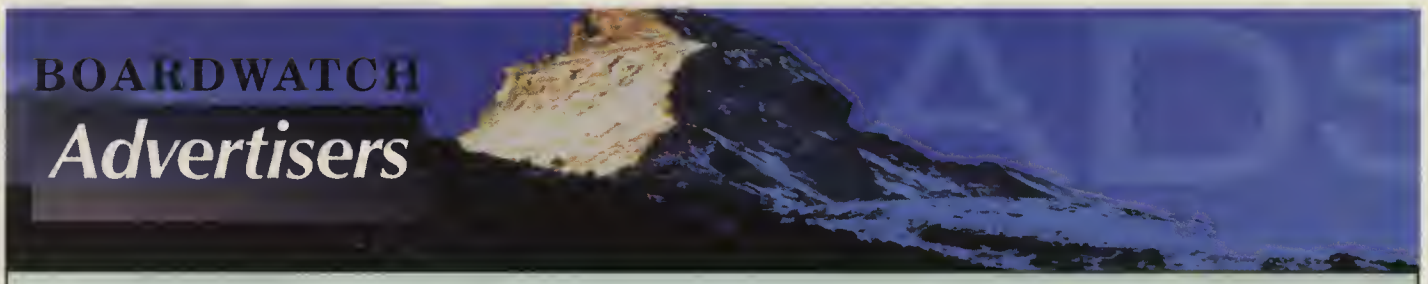

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Guide to Internet Access and the World Wide Web

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DVORAK ONLINE by John C. Dvorak

USE A LOGO, GO TO JAIL

In addition to his weekly syndicated radio call-in show, *Software/Hardtalk*, syndicated newspaper columns, magazine writing for ***MacUser***, ***PC Computing***, ***DEC Professional***, ***Information Technology***, and his featured "*Inside Track*" column in ***PC Magazine***, Dvorak is the author of several best-selling books, including ***Dvorak's Inside Track to DOS & PC Performance***, ***Dvorak's Guide to PC Telecommunications***, and ***Dvorak's Inside Track to the Mac***. *John can be reached at* `dvorak@aol.com`

FREE SPEECH? NYET!

If nothing else, the Internet will become a bonanza for lawyers. Anyone who has followed any of the recent cases regarding everything from freedom of speech, to libel, to trademarks and copyrights knows that the field is wide open. It's all exacerbated by the "we asked out lawyer and he told us to..." problem whereby lawyers are too often making corporate decisions. Here's a letter I recently received from Dick Harrigill:

John, As a follow-on to recent articles such as "Link to Me and I'll Sue You!", go look at the Web Site of Little League, Inc., the Little League Baseball folks.

Little League, rightfully so, does all that they can to protect their name and trademarks. Although the term "little league" has grown into our vocabulary to mean all youth sports, only groups who are chartered by Little League, Inc., can legally use the name. However, leagues chartered by Little League, Inc. necessarily have "Little League" in their legal corporate name. For example, I am involved with a legal nonprofit corporation chartered by Little League, Inc. named "Skyway Little League." Part of the charter allows us to use that name. Now visit the Little League Web Site at: **http://www.littleleague.org/thenet/cancant.htm**.

It says, in part: "One of the many privileges granted to local leagues who charter with the Little League program is permission to use the trademarked name of Little League and the circular logo and/or keystone logo. That permission to use the Little League name or logo applies only for use within your community. It is important to understand that while the Internet serves your area, it also serves a global community. For that reason, only Little League Baseball International Headquarters has the authority to extend permission to use its name or logo on the Internet."

Therefore, according to Little League, Inc., no local league, even if chartered, can have a web site that uses their own legal name, unless that site is blessed by the mother corporation. And, except in the local Skyway neighborhood, the name of our corporation is "Skyway _____ _____"!

Imagine the implications if this were to be upheld:
No web sites for Realtors without the permission of the mother corporation.

- *No Avon, Mary Kay, Tupperware, etc. distributor web sites without corporate blessing.*
- *No car dealer sites without the approval of the car maker.*
- *No church web sites without the blessing of the denomination.*

In fact, the horror scene he describes is a distinct possibility from my experiences. Much of this has to do with overseas laws. It's possible that the Chrysler Corporation could be sued in an Italian court if a dealer on the web did some comparative advertising, which is illegal in most of Europe. Or what about a corporate executive from some large corporation getting thrown in the Singapore calaboose because a web site selling his product made some nasty comments about the government there?

While it seems ridiculous, I think what Little League is doing is a trend, not an anomaly. As an aside and after looking at these web pages, I'm not convinced that you can't get their permission if you jump through a few hoops. But what I found offensive was the web guidelines, to wit:

What You Should Avoid On Your Web Site

- *Listing the names of your players including tournament team selection*
- *Listing individual players' stats*
- *Unmonitored chat rooms where children could be approached or exposed to inappropriate language*
- *Unofficial interpretations of the rules of Little League*
- *Links to sites other than "Authentic" Little League Sites*
- *Bulletin Boards*

Appoint only one person (web master) responsibility for posting notices to ensure the accuracy and authenticity of the information your league is providing.

In other words, the site is useless.

What I also think will come of this is that new companies and organizations with better ways of handling this will come along. The name Little League, as combined with the Skyway name, should somehow be allowed in this situation since you can be sure that all Little League teams in the future will have web sites and need to use their names! Who cares about the logo? What in fact will happen is that competitive organizations with a structure that utilizes public domain nam-

ing will come in and wipe out these old line organizations which don't know how to operate in the modern environment. The Skyway Junior Baseball League sounds fine to me. There are ways Little League, Inc. can license its logo, I'm sure. But it's obvious they've made no attempt to do so. They're goners.

FREE E-MAIL SYSTEM THAT DOES THE JOB

I hate to be the last guy on the boat but sometimes it happens. There are over 2 million users of the hotmail.com e-mail system and I can see why. It's a fantastic product. This is the company that came up with the notion that if you provided free e-mail for people, they would flock to the site and you could show them advertising. The ads are not intrusive and the e-mail system itself is nothing less than spectacular. It has boxes in which you can sort mail along with normal store and forward capabilities. It even takes attachments. The idea is that you can use your e-mail from any browser, not just yours. If you can get on the Web, then you can get on hotmail to send and receive mail. It's a perfect backup system. And it's an even better emergency system which you can use anytime.

Say you're traveling without a computer (a dubious habit). You discover that you have to send someone e-mail regarding something or other. What to do? You jump on `www.hotmail.com` and set up an instant account and send the mail. Since it's pop mail compatible, you can even have stuff forwarded to yourself once you set up the account.

Hotmail seems to sit on more than a few backbones since its response time is similar to that of AltaVista. It's fast. I like this product. It's also made me think twice about the viability of client-server software running on the Web. It's a prime example how to do it right. It just remains to be seen how it does when there are 20 million users, not just 2 million. ◆

Dvorak's Recipe Nook

Pecan Wine Sauce from Tennessee

I was reading a recent copy of the outstanding Cahners publication *Restaurants And Institutions* — a trade magazine for the restaurant business. I was taken aback by the slightly poetic subhead: "Classic French Cuisine uses wine, so why shouldn't Tennessee cooking use moonshine?" The author, backed up by chef Jose Guitierrez, make a strong argument for using Bourbon, Rum, Tequila, and even moonshine in cooking. All these liquors,(and whatever else you can find) if used judiciously, can add new dimensions to whatever you cook.

In that issue of the magazine, there is a recipe for a unique pecan wine sauce developed by Guitierrez which he serves with veal loin. He runs the Chez Philippe Restaurant in the famed Peabody Hotel in Memphis. The recipe is designed for 20 servings and I've recalculated it for 4 servings.

The base of the sauce is the pecan wine itself. This recipe makes a couple of gallons of the stuff. You take one 750-ml bottle of moonshine or eau-de-vie and mix with three bottles of dry red wine, 2 1/2-pounds of sugar and 3 pounds of mashed green pecans. You cover this mixture and let it rest for 4 to 6 weeks. Stir occasionally. Strain.

The sauce is made from this finished product.

For the sauce, you take two cups of the pecan wine and reduce two-thirds, add one cup of veal stock (chicken or vegetable stock should work equally well) and reduce until one cup total sauce remains. Add a good tablespoon or more of butter and whisk in. Season to taste with salt and pepper.

This is one of those sauces that you put on the plate and put the meat on top. ◆


SETTING UP AN
INTERNET PRESENCE
SHOULDN'T FRAY
YOUR NERVES

THERE ARE ENOUGH COMPLEXITIES IN LIFE. CONNECTING TO THE INTERNET SHOULDN'T BE ONE OF THEM.

Creating an Internet presence can be a frustrating experience, even for the expert. Beyond the web server there are routers to make the connections, FTP to move the files, and e-mail servers to give your mail a home. And don't forget the Domain Name Server that's required so the world can know your name. Even after you gather all the pieces, you still have to integrate them. And the costs, in time and money, can be staggering. But now there is an easier way.

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